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# FAMILY ECONOMICS REVIEW

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Consumer and Food Economics Institute  
Agricultural Research Service  
U.S. DEPARTMENT OF AGRICULTURE

FAMILY ECONOMICS REVIEW is a quarterly report on research of the Consumer and Food Economics Institute and on information from other sources relating to economic aspects of family living. It is prepared primarily for home economics agents and home economics specialists of the Cooperative Extension Service.

Authors are on the staff of the Consumer and Food Economics Institute unless otherwise noted.

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# DIETARY GOALS FOR THE UNITED STATES

One session of the 1978 Food and Agricultural Outlook Conference, November 14-17, 1977, focused on the "Dietary Goals for the United States" proposed by the Select Committee on Nutrition and Human Needs of the U.S. Senate in February 1977.<sup>1</sup> These goals specify the levels of fat, fatty acids, cholesterol, protein, carbohydrate, sugar, and salt in diets.

The somewhat diverse reactions to the goals by the scientific community are illustrated by comments of Dr. D. Mark Hegsted and Dr.

Gilbert A. Leveille in their talks which are presented in full in this issue. The views expressed are those of Drs. Hegsted and Leveille and not necessarily those of the USDA.

In a third talk at the Conference session, also in this issue, Betty Peterkin of the Consumer and Food Economics Institute's staff discussed some of the many diets for men, women, and children that might meet the goals. Her talk is in no way intended to endorse or discredit the goals. Furthermore, the Institute, at this time, neither recommends nor opposes the use of the diets presented. The Institute's food selection guides, such as the family food plans, will not be revised until after information from USDA's 1977-78 National Food Consumption Survey becomes available (see page 24).

<sup>1</sup> Select Committee on Nutrition and Human Needs, United States Senate, February 1977. Dietary Goals for the United States. 95th Congress, 1st Session. *Committee Print*.

## 245 U.S. DIETARY GOALS //

by D. Mark Hegsted<sup>1</sup>

The Dietary Goals for the United States published by the Senate Select Committee on Nutrition and Human Needs essentially state that Americans eat too much. They eat too much meat, too much fat—especially saturated fat—too much cholesterol, too much sugar, and too much salt. They should eat more fruits, vegetables, grain products—especially whole grain products—and unsaturated fat. It is clear that a statement of this kind is not very useful, even if you agree with the generalities, unless some quantitative estimates are provided. You cannot translate the statement into a dietary pattern without at least suggesting what is meant by too much and what might be a reasonable intake. The report suggests a reduction of fat from the current level estimated to be between 40 and 45 percent of calories to about 30 percent, that one-third of this should be saturated and one-third polyunsaturated fatty acids, and that the diet should not contain more than 15 percent of calories as sugar. These changes would result in an increase of

total carbohydrate consumption to 55-60 percent of calories, of which 40-45 percent would be starchy materials. It is recommended that protein should provide 12 percent of calories, that cholesterol intake should be on the order of 300 mg/day, and that of salt about 3 g/day.

It is important to emphasize that such a diet does not represent an ideal diet. We do not know what an ideal diet is. The Dietary Goals are an attempt to arrive at a more reasonable dietary pattern than the diet of most Americans. I cannot review much of the evidence upon which the Dietary Goals are based, but the major health problems of the United States and other affluent countries are coronary artery disease, stroke, cancer, diabetes, hypertension, and obesity. These are the diseases which kill Americans and extract a tremendous toll in medical costs, disability, and premature death. Treatment of these diseases is ineffective. There must be increasing efforts toward their prevention or amelioration. All these diseases are clearly associated with the diet we eat, and many other countries with less rich diets do not have this disease pattern. In addition to the epidemiologic evidence, there is

<sup>1</sup> Professor of Nutrition, Harvard School of Public Health.



extensive animal experimentation which supports the proposition that diet is an important causal factor in all these diseases.

The best experimental evidence is available for coronary heart disease. This disease alone kills about 600,000 Americans, many of them before age 65 or whatever a suitable retirement age may be. There is sufficient evidence demonstrating a causal relationship between diet and this disease alone to recommend that Americans change their diet. There are abundant data showing that:

Inappropriate diet → elevated serum lipids →  
atherosclerosis → heart attack.

It is certain that the dietary factors primarily responsible for this sequence of events are the amount and composition of dietary fat and the cholesterol content of the diet. It is important to emphasize that in American men the serum lipid levels rise during the late teens and twenties; many have extensive atherosclerosis in the twenties, yet coronary heart disease begins to become significant in the thirties and forties, and progressively more men have heart attacks as they become older. Thus, it is certain that the early atherosclerotic lesion which develops in young men does not induce heart attacks directly. It is also certain that the severe atherosclerotic lesions which occur later are nearly irreversible. It is important to emphasize this, because it probably means that dietary modification in middle-aged atherosclerotic men cannot be expected to have much effect on this process. As many of you are aware, a number of current dietary trials are now underway. These may be worthwhile but they cannot demonstrate the ultimate effect of diet upon coronary heart disease. A truly definitive experiment is beyond our capabilities. It would involve the recruitment of a cohort of teenage boys, feeding them a diet which would prevent the development of hypercholesterolemia, and determining the disease pattern over the next 20 or 30 years or longer. This is essentially an impossible experiment. Many people have optimistic and unwarranted expectations about what the current studies may or may not show.

I would also emphasize that if we considered the data available and were truly interested in minimizing the occurrence of heart disease, it is certain that the dietary recommendation would

be much more severe than that suggested by the Dietary Goals. Populations that have very little atherosclerosis, and almost no heart attacks, consume extremely low fat and otherwise restricted diets by our standards. Quite frankly, most of us will probably opt for the heart attack, cancer, diabetes, or hypertension—which are going to get almost all of us—rather than consume such a diet for a lifetime. Once we are sick—as has been emphasized by a recent television report—we may then be willing to submit to such a diet. It is interesting, incidentally, that the television report indicated, as I have already, that the severe diet did not appreciably modify the underlying atherosclerotic lesion—the electrocardiogram of the patients did not change. A considerable number of smaller dietary trials have already been reported. These have generally shown a modest reduction in heart attacks. More severe dietary restriction may produce more favorable results. We must assume, however, that these improvements are explained not by modification of the atherosclerosis process but by other mechanisms, possibly by changes in blood pressure and by a reduction in the thrombotic process which is the terminal event in many heart attacks. Whatever improvement can be obtained, it would seem quite certain that the earlier the dietary change is achieved the greater the effect will be.

It is important also to emphasize that our overall objective is probably not to eliminate heart attacks. It is not likely that immortality will be achieved by good dietary practice. It would be a tremendous accomplishment if we could delay heart attacks, cancer, stroke, diabetes, and hypertension so that they were not prominent causes of death or disability before age 65. Of course, many of us are old enough so that delay to 65 does not seem much of an accomplishment.

What we must search for is some dietary pattern that is “reasonable.” Recommendations for dietary changes that are too severe will be ignored by most of us. Some people will establish goals that are more than we can reasonably expect to achieve—to be president of a company, to make a million, to live to be a hundred, and so forth. This kind of goal does not mean that we consider we have accomplished nothing unless we achieve it. Excessive expectation, however, can be discouraging, and I believe we

are searching for something that we can expect Americans to do.

It is important to emphasize that the nutrition strategy which has been developed in the United States and elsewhere over the past 50 years has been aimed almost totally at the prevention of nutritional deficiency. With the discovery of the vitamins about 75 years ago and the recognition that pellagra, scurvy, xerophthalmia, beriberi, and rickets were important causes of death and disability, the primary goal of nutrition became and has been since that time to assure an adequate intake of all essential nutrients. This was tempered slightly by the recognition that obesity was undesirable, but the essential message that we have promoted has been and is "Eat more meat, more milk, more eggs, more fruits and vegetables, more cereal products—more of everything—but don't get fat." This message was developed when we had no idea about the ultimate effects of such a diet and essentially no knowledge of the relationship between diet and the chronic diseases which now beset affluent societies.

Nutritionists have often pointed out, correctly, that the great advances which flowed from Pasteur's discoveries demonstrating that disease was caused by infective organisms greatly retarded the acceptance of the fact that disease could also be caused by a deficiency or lack of something in the diet. The theory of infectious disease caused practically everyone to search for a positive causal agent, and the associations between poverty, poor hygiene, and deficiency disease made it extremely difficult to eliminate infection as a possible cause of pellagra, for example.

To a considerable degree, nutrition is now faced with a similar problem. We have devoted nearly all of our efforts to assuring an adequate diet—defined as one which contains enough protein, vitamins, and minerals. The proposition that much of our ill health is due to overnutrition—not only simply eating too much but eating too much of specific materials—is not easy to accept. It will require a substantial revision of nutritional thought and the nutritional education messages. I should point out that nutritionists cannot claim very much of the credit or blame for our current situation. What we eat is largely the result of our affluence, the agricultural system, and the sum of the effects of the food industry. The message,

however, has been the same wherever you heard it.

No one is suggesting, of course, that it is no longer important to maintain an adequate intake of essential nutrients. Clearly, it is. We do have some undernourished people in the country, but, fortunately, the number is small. They must continue to receive appropriate attention. The only relatively prevalent deficiency disease that we can identify is iron deficiency. This is not limited to poverty groups. Severe iron deficiency, however, is not common and generally requires medical attention. Nearly all nutritionists will agree that we should minimize iron deficiency and we could certainly do it. The problem has been, and continues to be, that we have not been able to convince the medical establishment that it was a sufficient problem to require preventive efforts. It is certainly not in the same league as heart disease and the other killer diseases. It is also certain that we do not have to overeat to avoid iron deficiency.

Most of us have seen a recent report which indicates that deaths from heart disease have declined in the past 10 years or so. This is great. The cause is not clear but this decline is what we should expect. The American Heart Association has for several years been advising a diet similar to that of the Dietary Goals. The American public has certainly heard of cholesterol—both dietary and serum cholesterol. Consumption of eggs and butter is down; consumption of unsaturated margarine is up. Many more people are jogging and exercising in various ways. Treatment of hypertension and diabetes, which often cause heart disease, is better. A considerable portion of the public has gotten the message about obesity and has done something about it. The severe hyperlipidemias are now clearly recognized as a health hazard, and dietary treatment is prescribed. Both medical and surgical treatment have improved. We should expect an improvement in the situation, but we must also be aware that this improvement leaves a long way to go. There are at least 200,000 premature deaths annually from heart disease, and as we improve the situation our definition of premature will be later and later. We must continue to do what we have been doing but with more vigor at every level.

It has been argued that a dietary pattern such as that suggested by the Dietary Goals is



not appropriate for children, pregnant women, and others. There is no nutritional basis for this. The protein intakes of Americans are so high that they greatly exceed all reasonable estimates of requirement. The diet suggested would not necessarily reduce the intakes of vitamins and minerals. Indeed, it may very well increase the intake of most. It should also be emphasized that in a technological society of the kind we have, the provision of vitamins and minerals is technologically easy. Fortification of foods can be expanded or restricted as we see fit. You simply cannot justify a diet which produces chronic disease in order to obtain sufficient vitamins and minerals.

Nobody expects the American diet to change overnight. Nutrition education, fortunately or unfortunately, whichever way you view it, does not appear to be very effective. But it is clear that the public is demanding better and more explicit information all of the time. As I have already indicated, whatever you may think, the Dietary Goals proposed by the McGovern Committee are relatively moderate recommendations. What the Dietary Goals mean in terms of food is something like this: Less meat and leaner meat and some substitution with poultry and fish. The protein consumption of the American public is now excessively high. It has no nutritional justification and my guess, for what it is worth, is that evidence will continue to accumulate to show that the high protein consumption is undesirable in itself and not only because meat is a primary source of saturated fat. It means less eggs and butterfat. The dairy industry should begin to look at the restrictions it has imposed upon itself that inhibit the production and marketing of low-fat products and modified dairy products. It means less sugar of all kinds. Products are going to have to be labeled with sugar content and saturated fat content. Sugar, whether deserved or not, has caught the public's eye

and there is essentially no nutritional defense of products high in sugar. Products will almost certainly have to be labeled with cholesterol and salt content and, again, there is no positive argument for high consumption levels. It means increased consumption of polyunsaturated vegetable oils in all forms. It means increased consumption of all kinds of fruits and vegetables. This should mean an expansion of the areas producing these products nearer to the consumers. It means increased consumption of breads, cereals, and potatoes. These have been the whipping boys since obesity became a popular subject but unjustifiably so. The calories in bread, pasta, and potatoes are not more likely to produce obesity than other sources of calories. Indeed, a leaner diet with less fat and sugar is likely to be helpful in controlling excessive intake of energy.

Some people have argued, of course, that we do not know enough to recommend a change in the American diet. I believe that we know so much that we cannot afford to ignore what we do know. We are dealing with the most important medical problems of our time. Many countries now have a better health record than we do. Sweden, which has one of the best, has already adopted national nutrition goals similar to the ones we are discussing. The issue is not whether we have proved that a change in diet will be beneficial, or whether we can predict the results of a moderation in the diet. As I have indicated, we do not have the technical capability to answer some of the questions we can easily ask. We can ask, however, what the proved benefits of the American diet are. There are no positive arguments for a diet which is high in fat, sugar, and cholesterol, and there is a host of arguments against it. The real issue is how soon, by what mechanisms, and how rapidly we move to encourage consumption of a more moderate diet.



# ESTABLISHING AND IMPLEMENTING DIETARY GOALS

by Gilbert A. Leveille<sup>1</sup>

The need for dietary goals is obvious. It is clear that the consuming public has a definite need for guidance in making appropriate food selections that will ensure, insofar as possible, the consumption of a diet providing the essential nutrients and ensuring maximal health. The selection of such a diet is not a simple matter and must be based on current scientific information. The public cannot be expected to be conversant with the scientific information and, therefore, this information must be translated into food terms which the consuming public can understand and use. The need for such goals should be inherent in any national food and nutrition policy. Such a policy, developed by the National Nutrition Consortium, has been incorporated in previous reports from the Senate Select Committee on Nutrition and Human Needs. Dietary goals are an important component of any national policy, for once established and accepted by the public they have significant impacts upon food production and processing systems. Any effective national policy must also involve an effective education component which will assist consumers in understanding and adopting the enunciated goals.

Recently, the Senate Select Committee on Nutrition and Human Needs published a set of dietary goals. This effort is laudable, but unfortunately the goals leave a great deal to be desired. In many respects these goals are not based on the contemporary science and if implemented would not be in the public interest. I will attempt to point out that these goals are not based on the whole of the scientific evidence available; they fail to recognize significant problems which exist in our society; and unfortunately, fail to recognize the possible negative impacts which their implementation might have.

Ideally, dietary goals should take into account those positive aspects of our current national diets and should assist in sustaining them. Further, they should correct the poor eating habits which can be identified. The

American diet has been referred to as "pathogenic" by some and as "disastrous" by others, implying that our diet has "deteriorated" in the past 50 to 75 years. I submit that such a conclusion is erroneous and misleading. The American diet today is better than ever before and is one of the best, if not *the* best, in the world today. There is much supporting evidence for this statement. One need merely consider the stature of the current generation of Americans, which is coming closer and closer to the achievement of maximum genetic potential. We have virtually eliminated morbidity and mortality from acute nutritional deficiencies. A prime example is pellagra resulting from niacin deficiency, which claimed thousands of lives only a few short decades ago but which is virtually unheard of today. The same could be said for rickets, which was overcome by the fortification of milk with vitamin D, and of goiter, which was eradicated by the iodization of salt. We have seen a remarkable increase in the life expectancy of the American population. We have seen many improvements in the quality of our food supply as measured by its safety, wholesomeness, and variety; it is unparalleled in the world today.

Taking all of these factors into account, it seems abundantly clear to me that we can put to rest serious concerns about the quality of our diet and any consideration of returning to the diet of days gone by. Any notion that a return to the diet of the past would improve the well-being of Americans is nostalgic nonsense. Rather, we should identify existing nutritional problems and attempt to develop solutions to them. This, it seems to me, is the appropriate challenge of today and the challenge of developing appropriate goals for the American population.

The goals developed by the Senate Select Committee imply that we have been a Nation without dietary goals. This is not completely true. Admittedly we have not had a national food and nutrition policy to give visibility to dietary goals, but assuredly we have had guidelines which have served effectively to direct many food and nutrition programs in this country. The guidelines of which I speak are

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the Recommended Dietary Allowances (RDA's) initially established by the Food and Nutrition Board of the National Research Council in 1941 and periodically revised since then. The RDA's were initially developed as a basis for planning food supplies for the military. They have proved to be equally valuable in planning food supplies for the civilian sector of our population and have served admirably as a basis for a variety of feeding programs within the U.S. Department of Agriculture. The RDA's have also been the basis for the establishment of guidelines for nutrition labeling by the Food and Drug Administration. Admittedly the RDA's are considerably different in evolution and purpose from the Senate Select Committee's Dietary Goals for the United States.

The RDA's differ from the Senate Select Committee's goals in that the former are based on the requirements for known nutrients. The RDA's represent an attempt to establish an allowance that will meet the needs of virtually the entire population. The goals developed by the Senate Select Committee, on the other hand, really reflect an attempt to provide guidelines for the prevention and/or cure of diseases considered to be public health hazards. Any dietary guideline must have, as a fundamental basis, the objective of meeting essential nutrient needs and, secondarily, must deal with other recommendations that would contribute to insuring the public health. If such guidelines are to deal with the prevention of specific diseases, there should be a sound scientific basis for their establishment and they should not put any segment of the population at nutritional risk. Unfortunately, the Senate Select Committee's dietary goals have not provided this assurance, and they are not based on the whole of available scientific evidence.

The dietary goals published by the Senate Select Committee assume (1) that the diseases of primary concern, namely cardiovascular disease and cancer, are of epidemic proportions in the United States, and (2) that appropriate dietary modifications can delay or prevent these diseases. I would like to spend a brief time reviewing these two fundamental assumptions. There is little question that the proportion of the U.S. population dying from cardiovascular disease and cancer has increased dramatically over the past 50 years. I submit that

this is not surprising and is to be expected. Accompanying the increase in mortality from cardiovascular disease and cancer has been a significant reduction in mortality from infectious diseases. Advances in medical science have greatly reduced mortality from such causes as tuberculosis and pneumonia. The old adage that "death and taxes are assured" remains to be disproved. Consequently, one would expect that the elimination of death from infectious diseases would simply involve some other cause of death becoming primary.

Accompanying the improvements in medical care, sanitation, and nutrition has been an increase in life expectancy and an increase in that segment of our population above the age of 65. This proportion of our population has increased significantly over the last several decades and continues to grow. The diseases of primary concern to the Senate Select Committee, namely cardiovascular disease and cancer, are chronic diseases. The probability of incurring these diseases grows with advancing age. Thus, with an older population an increase in both of these diseases is predictable. This is obvious when one examines mortality statistics on an age-adjusted basis. While the total number of deaths from cardiovascular disease and cancer has increased over the last several decades, the mortality rate expressed on an age-adjusted basis has not increased significantly and, in fact, for cardiovascular disease has shown a significant reduction. Thus, the urgency for changes in diet and life style to control the rate of increase of these chronic diseases is not supported by available evidence. This certainly does not imply that we should not direct our attention to further reducing morbidity and mortality of chronic diseases, for clearly that should be the direction of our research and education efforts.

I would like to turn to the scientific basis for the establishment of the Senate Select Committee's Dietary Goals. It is implied that the high incidence of cardiovascular disease in this country stems directly from an increased consumption of fat, particularly saturated fat, and cholesterol. It is clear that elevated blood cholesterol levels represent a risk factor in the development of cardiovascular disease and that diet can influence circulating cholesterol levels in some individuals. It should also be recognized that diet is not the only factor affecting



circulating cholesterol levels, nor is the blood cholesterol level the only, nor the major, risk factor in cardiovascular disease. The concept that dietary modification will prevent or delay atherosclerotic heart disease remains a hypothesis and not a demonstrated fact. While it may seem "prudent" to modify one's diet on the basis of existing hypotheses, it hardly seems a sufficient basis for the recommendation of major dietary changes for the entire population. There are many other risk factors associated with the development of cardiovascular disease. The relative importance of each varies from individual to individual and requires a comprehensive evaluation of the relative risk factors for each individual. Considerable controversy exists among specialists as to the relative value of dietary modification. There is no consensus upon which to establish definitive dietary guidelines for the general population.

The Senate Select Committee's report also implies that the intake of sugar contributes to the increased risk of cardiovascular disease in the American population. This conclusion is contrary to the views of most experts in the field. Such a hypothesis has been put forth, but experimental evidence supporting the hypothesis is completely lacking. Furthermore, the recommendation for an increased intake of polyunsaturated fatty acids may represent a risk which has yet to be fully evaluated. On the basis of the totality of available evidence, it seems highly premature to make any major recommendations for dietary change for the prevention of cardiovascular disease. Rather, it would seem far wiser to recommend the establishment of a system for the evaluation of individuals to establish that segment of the population at risk and to make appropriate dietary and other recommendations for these individuals.

The report of the Senate Select Committee proposes that a relationship exists between diet and the incidence of cancer. Evidence for such a relationship is extremely meager. The available evidence is strictly epidemiological in nature and remains to be verified experimentally. Such evidence is at best suggestive and cannot be accepted as a reasonable basis for recommending dietary changes. The recommendation of the Select Committee that a shift from foods of animal origin to those of plant

origin would protect the population from cancer is unfounded. Consequently, these recommendations, like those dealing with cardiovascular disease, are premature and unsound.

The Senate Select Committee has recommended a significant reduction in the intake of salt as a means of reducing the incidence of hypertension. Again, this recommendation is based on a modicum of tenuous information. The available evidence does demonstrate that excessive salt intake can induce hypertension in a segment of the population. There is debate as to the proportion of the population whose blood pressure would be influenced by salt intake, but it is generally agreed that this represents a relatively small proportion of the population. The desirability of reducing the salt intake of the total population must be carefully examined. It may be wiser to establish means of detecting those individuals at risk and to advise this group of desirable dietary changes. It should also be recognized that not all hypertensives will respond to a reduction in salt intake. Further, virtually all professionals examining the dietary goals of the Select Committee are in agreement that the recommended level of salt intake of 3 grams per day is excessively low and represents a level which is not achievable.

There are health problems which exist in this country and which should receive attention. Dental caries, obesity, and iron deficiency anemia have been identified by several surveys as problems warranting attention. There is also preliminary evidence suggesting that certain population segments have marginal intakes of certain trace elements, particularly zinc and perhaps chromium. These problems deserve attention.

The problem of dental caries has been researched to a significant degree, but the need for further research is evident. It is known that sucrose will contribute to dental caries; however, the contribution is not so much a quantitative one as a matter of the form in which sugar is consumed. Sugar in the form of sticky candies remains in the oral cavity, in contact with the dental enamel, for significant periods of time and provides an ideal environment for the proliferation of acid-producing microorganisms responsible for the initiation of caries.



The problem of obesity is recognized; however, the solution to this problem is not as evident. Certainly reduction of body weight to a desirable level involves a reduction in caloric intake. However, the achievement of that reduced intake remains difficult and is an area requiring further research. National dietary goals should certainly recognize the existence of obesity as a problem and provide incentive to reduce caloric intake. In this regard, a reduction in dietary fat could be supported since this is the most calorically dense component of our diets.

The intake of foods with low nutrient content is partially addressed in the Senate Select Committee's report. Unfortunately, the report deals only with the intake of sugar and fails to recognize the fact that other foods, such as alcohol and oils and shortenings, can also provide significant calories without providing other nutrients. The Select Committee's report erroneously implies that our intake of sugars and sweeteners has increased dramatically in recent decades. In fact, our intake of sugar on an absolute basis has not increased significantly since 1925. What has changed is the form in which sugar is purchased and utilized. A half century ago most of the sugar was purchased as such and utilized in the home. Today, a smaller proportion of sugar is purchased for home use, and the greater proportion is consumed in pre-prepared products, such as baked goods. However, it should be recognized that the proportion of calories derived from sugar has increased, for while the absolute amount of sugar consumed has remained unchanged, our per capita intake of energy has declined. Thus, our consumption of sugar as a percent of calories has increased. There is no evidence that this increased proportion of calories from sugar has any detrimental effect, but it should be recognized that sugar is one of those foods having a low nutrient content, and from this standpoint a reduction in its consumption might be warranted.

One of the significant concerns regarding the American diet is the fact that due to our sedentary life styles the consumption of calories is declining steadily. If we are to deal successfully with the problem of obesity, a still greater reduction will be required. The requirement for other nutrients remains essentially unchanged, even though caloric intake decreases. Conse-

quently, in order to meet nutrient needs, it becomes important to increase the nutrient density of those foods which are consumed. This requires an even more careful selection of foods to comprise a complete diet, a task which is virtually impossible for some nutrients at very low caloric intakes. For example, it is not unusual for women in the United States to be consuming as few as 1,500 to 1,700 calories per day. On this caloric intake it is virtually impossible to meet the 18-milligram RDA for iron in the premenopausal woman. In such individuals the iron requirement can only be met by increased fortification of certain foods or by the use of iron supplements. This appears to be true for other nutrients, such as zinc and copper. Consequently, any recommendation for a change in diet must carefully assess the impact that such change would have on the intake of essential nutrients. To my knowledge, this has not been assessed for the changes which the Select Committee has recommended.

It seems that the recommendations for dietary change made by the Select Committee have not been evaluated from the standpoint of other potential, undesirable impacts which they might have if implemented. For example, it is recognized that a significant proportion of the total iron consumption by the U.S. population is derived from meats and meat products. Further, it is recognized that a large proportion of the iron derived from meat is in the form of heme, which has a much higher availability than does nonheme iron. If the recommendations of the Select Committee were followed, the likely effect would be a significant reduction in total iron intake and a decreased availability of that iron which was consumed. If this were to occur, the effect on the problem of anemia, which already appears to be widespread, would be disastrous. Thus, the recommended changes cannot be made without recognizing the need for increased iron fortification or somehow increasing the availability of iron from sources other than meat.

Similarly, the American population derives a significant proportion of its dietary zinc from meat. A reduction in meat intake would result in a significant reduction in zinc consumption. Further, the increased intake of cereal grains would increase the dietary content of phytic acid which is known to bind zinc and reduce its

availability. Thus, there is a reasonable probability that implementation of the Select Committee's goals might result in serious zinc deficiency in some segments of the population.

Careful evaluation of the Select Committee's recommendations demonstrates that they are not based on the available scientific information. Further, there are many inconsistencies and outright errors in the development of the goals. The errors of omission and interpretation are sufficiently great to cause serious concern if they were taken seriously and applied to any current feeding programs.

There is a need for sound dietary goals to guide feeding programs and to guide individual consumers in their food choices. There is no question, in my opinion, that the Senate Select

Committee's goals are inappropriate and that a totally new effort is required. Such an effort should involve a broad cross-section of expertise from the nutrition, food, and medical communities. It should involve consumers and consumer advocates who are knowledgeable about the application of nutrition and food information by consumers. Only in this way can a realistic set of dietary goals be established which will serve the best interests of the U.S. population. I firmly believe that the Department of Agriculture should be at the forefront of such a development. This would seem particularly appropriate, since the application of sound guidelines to the feeding programs administered by the Department would impact upon countless thousands of individuals.

## 245 THE DIETARY GOALS AND FOOD ON THE TABLE //

by Betty B. Peterkin<sup>1</sup>

This fall, Secretary Bergland has repeatedly emphasized the importance of nutrition in setting the direction for food and agriculture policy. As part of the Department's responsibility in this area, the Agricultural Research Service—the agency of the Federal Government with primary responsibility for the development of food selection and dietary guidance for the general public—began to reexamine its national dietary guidelines.

As one step in that process the Agricultural Research Service (ARS) has analyzed the goals set forth in the report of the Senate Select Committee on Nutrition and Human Needs—*Dietary Goals for the United States*. We hope this analysis, made primarily for the use of USDA, will be useful to others, such as the Select Committee on Nutrition and Human Needs (called the Committee in this article), nutrition scientists and educators, the food industry, and consumers, in appraising the goals from their various perspectives.

The analysis consists of interpretation of the Dietary Goals in terms of the kinds and amounts of foods that will meet them. It

explores diets for individuals as well as the population as a whole. Such interpretation makes possible appraisal of the goals for their sociological and economic, as well as their physiological, implications. Through such interpretation, the meaning of the goals for the consumer, the food producer, the food processor, and food regulatory agencies begins to become apparent.

Today, I will review briefly the changes in dietary levels and in food selection suggested by the Committee in its report of the Dietary Goals released February 1977. Then, I will discuss some of the many diets for men, women, and children that meet the Dietary Goals and certain changes in food selection and/or food production and processing that might contribute toward achieving the goals.

### Dietary Goals and Food Selection Changes Suggested in Committee Report

The Committee report shows the difference in sources of food energy, such as fat, protein, complex carbohydrate, and sugar, for the "current diet" and for the Dietary Goals. The current diet is based on the nutritive value of the U.S. per capita food supply—the food that disappears into civilian food consumption, some of which may not be eaten.

<sup>1</sup> The assistance of Richard L. Kerr and Carole J. Shore in the preparation of material presented is gratefully acknowledged.



The goals call for:

- a decrease from 42 percent to 30 percent of energy from total fat.
- a decrease from 16 percent to 10 percent of energy from saturated fatty acids.
- no change in the level for protein...to provide 12 percent of energy.
- an increase in total carbohydrate consumption to account for 55 to 60 percent of energy intake.
- a decrease in the consumption of sugar—a major source of carbohydrate. The percents in the Committee's report—24 percent of energy in the current diet and 15 percent of energy as the goal—refer to total sugars, including sugars found naturally in foods such as milk and fresh fruit.
- a twofold increase in the energy from complex carbohydrates, provided in diets mainly by grain products and some vegetables.

Dietary Goals are also specified for cholesterol—about 300 milligrams per day—and for salt—about 3 grams per day. No goal or energy allowance is specified in the report for alcohol, which provides substantial amounts of energy in many U.S. diets.

The Committee report gives this advice on how to change food selection to meet the goals:

- Eat more fruits and vegetables and whole grains.
- Eat less meat and more poultry and fish.
- Cut down on foods high in fat and partly substitute polyunsaturated for saturated fat.
- Substitute nonfat milk for whole milk.
- Cut down on eggs, butterfat, and other high cholesterol sources.
- Cut down on sugar and foods high in sugar.
- Cut down on salt and foods high in salt.

These suggestions point the way toward the proposed goals for the "average" consumer in the population. They also present a challenge to food and agricultural researchers, food regu-

latory agencies, and to food producers and processors to develop and supply the population with foods that are low in fat, especially saturated fat, and that contain less sugar and salt.

### Food Consumption and the Dietary Goals

The Committee report shows that U.S. diets as defined by the food that disappears into civilian consumption do not meet the goals. U.S. diets can be appraised with respect to the goals using two other types of dietary data: (1) food used by households in terms of food brought into the kitchen—as purchased or obtained from home gardens or as gift or pay, and (2) food intake or food actually eaten by individuals. These two types of data were collected nationwide in USDA's 1965-66 Household Food Consumption Survey and are again being collected in our 1977-78 survey. Food intakes of individuals are also obtained in U.S. Department of Health, Education, and Welfare's Health and Nutrition Examination Survey.

Diets of men, women, and children, in terms of food as purchased, from the 1965-66 survey do not meet the Dietary Goals (table 1). Fat, protein, cholesterol, and sugar levels are higher and carbohydrate levels are lower on the average than the goals. Levels of polyunsaturated fatty acids, as indicated by linoleic acid, are lower than the goals; and levels of monounsaturated fatty acids, as indicated by oleic acid, and of saturated fatty acids are higher than the goals. Generally, men's diets deviate most from the goals. Fat and cholesterol levels in their diets are somewhat higher than in diets of women and children. On the other hand, sugar levels are lowest in men's diets—providing only 14 percent of food energy (calories) compared with 16 percent for women and as much as 18 percent for children. Average diets for all of the 14 sex-age categories studied by ARS<sup>2</sup> provide the Recommended Dietary Allowances<sup>3</sup> (RDA's) for protein, vitamin A value, thiamin, riboflavin, niacin, and ascorbic acid; but diets for several categories fail to meet the RDA for calcium and iron.

<sup>2</sup> See table 3 for sex-age categories.

<sup>3</sup> National Academy of Sciences. 1974. Recommended dietary allowances. 8th edition. Washington, D.C.



Daily food intakes of 6,000 people from the 1965-66 survey were reviewed with respect to two of the goals—those for total fat and total carbohydrate. Less than 3 percent of the persons reported intakes that met the two goals. Essentially none of the 3 percent reported intakes that also met the 1974 RDA's for all of the five vitamins and two minerals studied.

### Modifying Diets to Meet the Dietary Goals

We modified diets to meet the Dietary Goals using the Committee's suggestions for change in food selection, listed previously, and average food consumption patterns (diets) for 14 sex-age categories from our 1965-66 food consumption survey as the basis for certain assumptions about food selection. Alternate

assumptions incorporate some possible modifications to foods through change in production and processing. Obviously, other assumptions could be used for deriving diets beyond the dozen or more we have developed for this study.

The food consumption patterns used consist of average quantities of 17 food groups in terms of food as you buy it.<sup>4</sup> Examples of the food groups are milk, cheese, and ice cream; meat, poultry, and fish; eggs; dry legumes and nuts; four groups of vegetables and fruits; four

<sup>4</sup>Food as purchased or brought into the kitchen from garden or farm in terms of 17 food groups—the 14 food groups shown in table 3 and coffee, tea, and cocoa; punches, ades, and soft drinks; and seasonings and leavening agents.

Table 1. Food energy distribution and cholesterol content of food consumption patterns, 1965-66<sup>1</sup>

Item	Dietary Goals	Child, 6-8 years	Child, 9-11 years	Male, 20-54 years	Female, 20-54 years	Person <sup>2</sup>
Percentage of food energy from:						
Protein .....	12	14	14	14	14	14
Carbohydrate .....	55-60	49	49	44	47	47
Sugar <sup>3</sup> .....	10	18	18	14	16	16
Fat .....	30	38	37	42	39	40
Linoleic fatty acid ...	<sup>4</sup> 10	6	6	7	6	6
Oleic fatty acid .....	<sup>5</sup> 10	15	15	17	16	16
Saturated fatty acids .	10	14	13	14	14	14
Milligrams of cholesterol per day .....	300	312	386	553	374	412

<sup>1</sup>Food as purchased or brought into the kitchen from garden or farm to provide meals and snacks for individuals by sex and age, estimated from USDA's 1965-66 Household Food Consumption Survey. Amounts of food for each sex-age category were increased or decreased proportionately to provide the 1974 Recommended Dietary Allowance for energy plus 5 percent—to allow for some discard of food and still provide for energy needs. Drippings and one-half of the separable fat from meat are assumed discarded.

<sup>2</sup>Food consumption patterns for 14 sex-age categories weighted by the 1975 U.S. population.

<sup>3</sup>Sugar other than that found naturally in foods, such as milk and fresh fruit.

<sup>4</sup>Goal for all polyunsaturated fatty acids.

<sup>5</sup>Goal for all monounsaturated fatty acids.

groups of grain products; fats and oils; and sugar and sweets.

Table 2 shows some of the food groups and the nutrient sources of energy they provide compared to the recommended distribution of energy sources of the Dietary Goals. The groups with large percentages of calories from complex carbohydrate are more desirable than

those with large percentages from fat for changing diets to meet the goals. To increase carbohydrate levels in diets, as the goals propose, quantities of vegetables and fruits and cereal and bread in the diet will need to be increased. To reduce fat levels in diets, quantities of food groups that contain fats and oils, milk, meat, and eggs will need to be reduced.

Table 2. Sources of food energy from selected food groups

Item	Total	Carbohy- drate	Protein	Fat
		<u>Percent</u>		
Dietary Goals .....	100	58	12	30
Consumption pattern: <sup>1</sup>				
Milk, cheese, ice cream ....	100	30	21	49
Eggs .....	100	2	33	65
Dry beans and peas, nuts ...	100	34	18	48
Meat, poultry, fish <sup>2</sup> .....	100	2	36	62
Dark-green, deep-yellow vegetables .....	100	81	14	5
Citrus fruit, tomatoes .....	100	87	8	5
Potatoes .....	100	72	9	19
Other vegetables, fruit ....	100	86	9	5
Cereal, pasta .....	100	84	11	5
Flour, mixes .....	100	83	10	7
Bread .....	100	77	13	10
Other bakery products .....	100	62	7	31
Fats, oils .....	100	2	--	98
Sugar, sweets .....	100	94	1	5
Option 1 assumptions:				
Milk, skim .....	100	56	39	5
Meat, poultry, fish <sup>3</sup> .....	100	2	44	54
Option 4 assumptions:				
Meat, poultry <sup>4</sup> .....	100	0	68	32
Cereal <sup>5</sup> .....	100	89	8	3

<sup>1</sup>Average selections within food groups as used by U.S. households in 1965-66.

<sup>2</sup>Drippings and one-half of separable fat from meat are assumed as discarded.

<sup>3</sup>Drippings and all separable fat from meat are discarded and amounts of meat, poultry, and fish are adjusted to one-half meat and one-half poultry and fish.

<sup>4</sup>One-half Good Grade boned beef rump roast with drippings and all separable fat discarded and one-half broiler chicken with drippings and skin discarded.

<sup>5</sup>One-half raw brown rice and one-half white enriched parboiled rice.



Also, the makeup of certain food groups can be changed to provide higher proportions of complex carbohydrate and lower proportions of fat through product modification and/or food selection.

We assumed in modifying diets to meet the goals that the makeup of foods within most of the 17 food groups in the food consumption patterns is the same as the average for households surveyed. For example, the proportion of the citrus fruit and tomatoes group that was reported as fresh oranges by survey households in 1965-66 is assumed in the diets. However, for three groups—meat, poultry, and fish; milk, cheese, and ice cream; and fats and oils—we set up three alternative sets of assumptions (options) concerning the makeup of the group to demonstrate their differing impacts on diets. Option 1, which attempts to follow suggestions for change in food selection in the Committee report, is used primarily in this study for interpreting the goals (tables 3-7). Alterations to usual consumption in Option 1 are as follows:

For the meat group, drippings and all separable fat from meat are discarded; the quantities of meat, poultry, and fish are adjusted from about three-fourths meat and one-fourth poultry and fish to one-half meat and one-half poultry and fish. These changes reduce the percent of calories from fat in the meat, poultry, and fish group from 62 percent to 54 percent.

For the milk group, skim milk replaces all milk, cheese, and ice cream. This change reduces the percent of calories from fat in the milk group from 49 percent to 5 percent.

For the fat group, butter and margarine are replaced by soft margarine, and lard and vegetable shortening are replaced by vegetable oils. These substitutions increase the proportion of polyunsaturated fatty acids and decrease the proportion of saturated fatty acids.

Options 2 and 3, which more closely resemble reported food consumption within the milk, meat, and fat groups than Option 1, are described, and information about diets incorporating them is given in tables 8 and 9. For example, Option 2 assumes the use of 2-percent-fat milk and no change in the ratio of

meat to poultry and fish; and Option 3 assumes selections within groups to be essentially as reported by survey households.

A fourth set of assumptions (Option 4) illustrates some changes in food selection with major implications for food production and processing of foods, as well as for Government regulations, that would contribute toward lower levels of fat and higher levels of complex carbohydrate in diets. Assortments of foods in food groups assumed in this option tend to be optimum with respect to lowering levels of fat and increasing levels of complex carbohydrate. In Option 4, as in Option 1, milk is in nonfat form, and fats and oils are those types with high proportions of polyunsaturated fatty acids. The meat group includes items of low fat content—lean meat from Good Grade beef and flesh of chicken, or meat and poultry products of comparable low fat composition. This group as modified has an average of 6 percent dietary fat by weight, considerably lower than the 30 percent currently allowed in certain processed meats, such as frankfurters. With respect to grain products, Option 4 includes only the kinds of grain with the highest carbohydrate content, such as rice, and eliminates grain products that contain fat and sugar. Option 4 changes would reduce the percent of calories from fat in the meat, poultry, and fish group from 62 percent to 32 percent. They would increase the percent of calories from carbohydrate in the grain products group to 89 percent.

The model for developing the USDA family food plans<sup>5</sup> was adapted and used to adjust the food consumption patterns of each of the 14 sex-age categories to meet the Dietary Goals. The food plan model selects the optimum diet—the quantities of the 17 food groups that represent as little change from the quantities of the food groups in the food consumption pattern as is necessary to meet nutritional specifications. "Change" is measured in terms of squared weighted deviations from the quantities of food groups in the consumption pattern, and total change is minimized. The

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<sup>5</sup> For additional information on procedures used in developing food consumption patterns and on the model used to modify patterns, refer to "The Thrifty Food Plan," CFE(Adm.)326, Consumer and Food Economics Institute, Agricultural Research Service, USDA, Hyattsville, Maryland 20782.



Table 4. Food for a week<sup>1</sup> to meet the Goals and the RDA,<sup>2</sup> Option 1<sup>3</sup>

Family member	Milk, skim <sup>3</sup>	Eggs	Dry beans and peas, nuts <sup>4</sup>	Meat, poultry, fish <sup>3</sup>	Dark-green, deep- yellow vegetables	Citrus fruit, tomatoes	Potatoes	Other vegeta- bles, fruit	Cereal, pasta	Flour, mixes	Bread	Other bakery products	Fats, oils <sup>3</sup>	Sugar, sweets
	<u>Qt</u>	<u>No.</u>	<u>Pound</u>											
Child:														
7 months to 1 year .	4.78	0.00	0.03	0.00	0.50	0.69	0.21	5.04	1.30	0.06	0.09	0.14	0.37	0.24
1-2 years .....	2.86	3.20	.14	.47	.34	1.41	.79	3.86	1.94	.29	.61	.28	.24	.20
3-5 years .....	3.87	2.81	.23	1.51	.31	1.51	1.03	3.61	1.23	.45	.90	.63	.59	.32
6-8 years .....	5.06	2.79	.29	2.05	.40	1.95	1.50	4.59	1.26	.72	1.36	1.05	.75	.37
9-11 years .....	5.81	3.71	.32	2.74	.45	2.55	1.76	6.00	1.50	.93	1.74	1.38	.90	.43
Male:														
12-14 years .....	5.85	3.84	.40	3.02	.54	2.46	1.95	5.01	1.62	1.08	2.10	1.44	.95	.46
15-19 years .....	5.67	3.35	.37	3.59	.47	2.58	2.55	5.49	1.31	1.33	2.53	1.72	.97	.43
20-54 years .....	2.98	3.12	.31	4.13	.56	2.67	2.43	5.74	1.20	1.24	2.33	1.61	.78	.41
55 years and over ..	2.57	3.75	.20	3.74	.70	2.38	2.04	5.55	1.40	.96	1.88	1.27	.72	.44
Female:														
12-19 years .....	4.41	3.90	.34	1.96	.59	2.54	1.50	6.02	1.68	.91	1.63	.90	.67	.30
20-54 years .....	2.05	5.31	.28	2.52	.73	2.85	1.58	5.43	1.53	.80	1.60	.78	.62	.29
55 years and over ..	2.52	4.36	.11	2.49	.60	2.64	1.31	4.99	.93	.75	1.22	.93	.57	.33
Pregnant .....	4.11	4.50	.30	2.95	.83	3.28	1.83	5.98	.95	1.16	1.73	1.19	.77	.37
Nursing .....	3.88	3.73	.25	3.62	.81	3.51	2.03	6.37	1.10	1.20	2.00	1.36	.83	.39

<sup>1</sup> Amounts of food as purchased or brought into the kitchen from garden or farm.<sup>2</sup> Recommended Dietary Allowance plus 5 percent for energy, vitamin A value, thiamin, riboflavin, niacin, ascorbic acid, calcium, and iron. Energy intake is distributed as 30 percent or less from fat, 14 percent or less from protein, 56 percent or more from carbohydrate, and 10 percent or less from sugar other than that found naturally in foods such as milk and fresh fruit. Saturated fat provides 10 percent or less of energy intake, and cholesterol intake is limited to no more than 300 milligrams per day plus 5 percent.<sup>3</sup> Food consumption in terms of food groups defined as Option 1. Average selections within food groups as used by U.S. households in 1965-66 are assumed except (1) drippings and all separable fat from meat are discarded, and the amounts of meats, poultry, and fish are adjusted to one-half meat and one-half poultry and fish; (2) milk and dairy products are replaced by their calcium equivalent in skim milk; (3) butter and margarine are replaced by soft margarine, and lard and vegetable shortening are replaced by vegetable oils.<sup>4</sup> Weight in terms of dry beans and peas, shelled nuts, and peanut butter.

Table 3. Change in food consumption patterns<sup>1</sup> for 14 sex-age categories required to meet the Goals but not necessarily the RDA,<sup>2</sup> Option 1

Food group	Child, 7 months to 1 year	Child, 1-2 years	Child, 3-5 years	Child, 6-8 years	Child, 9-11 years	Male, 12-14 years	Male, 15-19 years	Male, 20-34 years	Male, 35 years and over	Female, 12-19 years	Female, 20-34 years	Female, 35 years and over	Pregnant	Nursing
Milk, cheese, ice cream	-12	10	12	12	12	13	14	12	11	12	13	10	11	12
Eggs	-100	-26	-11	-12	-8	-11	-41	-57	-47	-12	-6	-8	-30	-43
Dry beans and peas, nuts	-73	-23	-2	-1	4	2	8	12	13	3	13	3	8	11
Meat, poultry, fish	-100	-46	-22	-22	-16	-19	-20	-21	-12	-21	-10	-13	-20	-19
Dark-green, deep-yellow vegetables	44	26	22	22	21	22	23	22	18	22	20	17	21	21
Citrus fruit, tomatoes	55	28	23	23	21	22	23	21	17	22	19	17	20	20
Potatoes	77	36	30	30	29	30	32	31	25	31	28	23	30	30
Other vegetables, fruit	53	27	22	22	21	21	22	21	17	21	19	16	20	20
Cereal, pasta	141	71	70	76	73	85	95	105	76	88	90	69	97	97
Flour, mixes	98	60	57	62	60	69	78	85	62	72	72	57	78	78
Bread	67	42	44	48	47	54	61	67	50	55	58	44	62	62
Other bakery products	156	42	32	33	30	33	35	37	25	35	33	25	35	35
Fats, oils	735	127	58	42	33	15	1	-18	-8	27	-13	-3	-5	-4
Sugar, sweets	29	-46	-60	-61	-64	-63	-62	-55	-52	-69	-62	-55	-63	-63

<sup>1</sup>Food consumption in terms of food groups defined as Option 1. Average selections within food groups as used by U.S. households in 1965-66 are assumed except (1) drippings and all separable fat from meat are discarded, and the amounts of meats, poultry, and fish are adjusted to one-half meat and one-half poultry and fish; (2) milk and dairy products are replaced by their calcium equivalent in skim milk; (3) butter and margarine are replaced by soft margarine, and lard and vegetable shortening are replaced by vegetable oils.

<sup>2</sup>Recommended Dietary Allowance for energy plus 5 percent, distributed as 30 percent or less from fat, 14 percent or less from protein, 56 percent or more from carbohydrate, and 10 percent or less from sugar other than that found naturally in foods such as milk and fresh fruit. Saturated fat provides 10 percent or less of energy intake, and cholesterol intake is limited to no more than 300 milligrams per day plus 5 percent.

Table 5. Change in food consumption patterns<sup>1</sup> for 14 sex-age categories required to meet the Goals and the RDA,<sup>2</sup> Option 1

Food group	Child, 7 months to 1 year	Child, 1-2 years	Child, 3-5 years	Child, 6-8 years	Child, 9-11 years	Male, 12-14 years	Male, 15-19 years	Male, 20-54 years	Male, 55 years and over	Female, 12-19 years	Female, 20-54 years	Female, 55 years and over	Preg- nant	Nursing
Milk, cheese, ice cream . .	-12	-24	4	12	12	13	14	12	11	16	-2	38	64	43
Eggs . . . . .	-100	6	2	-12	-8	-11	-41	-57	-47	13	17	-4	-18	-37
Dry beans and peas, nuts .	-73	36	14	-1	4	2	8	12	13	41	56	1	42	9
Meat, poultry, fish . . . .	-100	-65	-19	-22	-16	-19	-20	-21	-12	-41	-33	-20	-35	-27
Dark-green, deep-yellow vegetables . . . . .	44	73	29	22	21	22	23	22	18	59	55	27	47	32
Citrus fruit, tomatoes . .	55	41	23	23	21	22	23	21	17	29	27	17	21	20
Potatoes . . . . .	77	37	26	30	29	30	32	31	25	25	25	18	21	24
Other vegetables, fruit . .	53	49	24	22	21	21	22	21	17	33	32	16	22	19
Cereal, pasta . . . . .	141	292	93	76	73	85	95	105	76	193	220	53	64	76
Flour, mixes . . . . .	98	60	42	62	60	69	78	85	62	80	70	74	105	96
Bread . . . . .	67	66	37	48	47	54	61	67	50	59	63	41	47	57
Other bakery products . . .	156	-15	15	33	30	33	35	37	25	-2	-4	20	21	28
Fats, oils . . . . .	735	5	56	42	33	15	1	-18	-8	17	-2	1	3	1
Sugar, sweets . . . . .	29	-58	-59	-61	-64	-63	-62	-55	-52	-69	-62	-53	-60	-61

<sup>1</sup>Food consumption in terms of food groups defined as Option 1. Average selections within food groups as used by U.S. households in 1965-66 are assumed except (1) drippings and all separable fat from meat are discarded, and the amounts of meats, poultry, and fish are adjusted to one-half meat and one-half poultry and fish; (2) milk and dairy products are replaced by their calcium equivalent in skim milk; (3) butter and margarine are replaced by soft margarine, and lard and vegetable shortening are replaced by vegetable oils.

<sup>2</sup>Recommended Dietary Allowance plus 5 percent for energy, vitamin A value, thiamin, riboflavin, niacin, ascorbic acid, calcium, and iron. Energy intake is distributed as 30 percent or less from fat, 14 percent or less from protein, 56 percent or more from carbohydrate, and 10 percent or less from sugar other than that found naturally in foods such as milk and fresh fruit. Saturated fat provides 10 percent or less of energy intake, and cholesterol intake is limited to no more than 300 milligrams per day plus 5 percent.



weights are set to cause deviations to be minimized on the basis of percentage change rather than change in pounds of food groups. The squaring of weighted deviations results in small changes in amounts of several food groups, rather than a large change in one group to meet a specification.

Two sets of nutritional specifications (Goals) based on the Dietary Goals were used in diets to be discussed here. The two sets differ only in that one includes specifications for levels of five vitamins—vitamin A value, thiamin, riboflavin, niacin, and ascorbic acid—and two minerals—calcium and iron; and the other does not.

Specific Goals used in modifying diets in this study are as follows—

—Total energy intake for each sex-age category equal to the RDA plus 5 percent. The 5 percent is added to allow for some discard of food and still provide for energy needs.

—Total fat to provide 30 percent or less of energy.

—Saturated fat to provide 10 percent or less of energy.

—Cholesterol in daily amounts of no more than 300 milligrams plus 5 percent.

—Sugar other than that found naturally in foods such as milk and fresh fruit to provide 10 percent or less of energy. The 10 percent goal for such sugar, rather than the 15-percent goal for total sugars in the Committee report, was used with concurrence of the Committee.

—Protein to provide 14 percent or less of energy. The 14 percent level, rather than the 12 percent goal in the Committee report, also is used with the concurrence of the Committee. *The Committee's intent in establishing the goal for protein was to maintain the level of protein in the current diet; therefore, 12 percent of energy from protein—the level in the U.S. food supply in recent years—was selected. In the food patterns from the 1965-66 survey of household food consumption used in this study, 14 percent of energy is provided by protein; therefore, a goal of 14 percent is used.*

—Carbohydrate to provide 56 percent or more of energy.

—Five vitamins and two minerals in amounts of at least the RDA plus 5 percent. (This specification is included in only one of the two sets of goals.)

—Salt is not included as a specification because of the limited information on the sodium content of foods and on salt added to food.

### Diets That Meet the Goals, Option 1

Changes in diets for all sex-age categories are required to meet the Goals but not necessarily the RDA (table 3) and to meet the Goals and the RDA (tables 4 and 5). Diets modified to meet only the Goals also meet the RDA for a man 20-54 years of age and many of the other sex-age categories.

To meet the Goals, a man 20-54 years old, in addition to changing selections from the milk, meat, and fat groups according to Option 1, would need to buy and use on the average—

—two-thirds more grain products

—one-fourth more vegetables and fruit

—one-eighth more dry legumes and nuts

—one-eighth more milk—all of it in the form of skim milk

—one-half as many eggs

—one-half as much refined sugar and sweets, such as sirup, jams, and jellies

—one-sixth less fats and oils and

—one-fifth less meat, poultry, and fish. Taking into account the adjustment to increase the ratio of poultry and fish to meat, as suggested by the Committee and incorporated into Option 1, this decrease of one-fifth for the group translates into a 45-percent decrease for meat and a 45-percent increase for poultry and fish. However, the suggestion by the Committee that meat consumption be reduced and poultry and fish consumption be increased—a change in the ratio of meat to poultry and fish—is not necessary if the meat eaten is trimmed of all fat, fat drippings from meat are not used, and other measures to control fat in the diet are followed. Reduction in the overall consumption of meat, poultry, and fish is essentially the same when, under Option 1, the ratio of meat to poultry and fish is changed (table 5)

and, under Option 2, it is not changed (table 8).

Meeting the Goals for total carbohydrate, sugar, protein, and total fat appears to require the most change in quantities of food groups used for all sex-age categories. The Goals for saturated fatty acids and for cholesterol, except in the man's diet, are not as difficult to achieve. This is partly because the quantities of meats and eggs are restricted due to their relatively low-carbohydrate and high-fat composition and because only fats and oils that have high proportions of polyunsaturates and skim milk are used.

The cholesterol goal of 300 milligrams per person per day is more limiting for men than for women and children. It translates into 110 milligrams per 1,000 calories of energy allowance for a man, compared with 150 milligrams for a woman and 167 milligrams for a 6-year-old child.

The food sources of the calories from carbohydrate, protein, fat, and sugar in the man's diet and in his diet modified to meet the Goals with Option 1 assumptions are discussed below:

**Carbohydrate.** To meet the Goals, the quantity of cereal, pasta, flour, and mixes in the consumption pattern is about doubled; the quantity of bread is increased by two-thirds; and the quantity of other bakery products is increased by over one-third. Such increases in the use of grain products are required to meet the carbohydrate goal. Grain products are required also to provide energy in the modified diet to replace energy provided by several sources, such as the carbohydrate from larger quantities of sugar, the fat from whole milk and less well-trimmed meat, and fat and protein from larger quantities of meat and eggs. Increased quantities of vegetables and fruit also help provide the needed carbohydrate. Calories from sugar, other sweets, and soft drinks are limited by the sugar goal.

**Protein.** The number of calories from protein in the man's diet is the same as in his diet modified to meet the Goals, each representing 14 percent of his total calorie needs. However, the food sources of protein differ. The increased quantities of grain products, required to provide the carbohydrate goal, also provide

protein; and the amount of protein from animal products must be reduced if protein is limited to provide only 14 percent of calories. Therefore, the protein goal is limiting in planning diets to meet the Goals.

**Fat.** A man must reduce his fat consumption by 350 calories per day—from 1,200 calories to 850 calories—to meet the goal of 30 percent of total calories from fat. Changes in the composition of the milk and meat groups under Option 1 and the reduction in quantities of meat and eggs account for a reduction of over 300 calories.

The suggestion that skim milk be used in place of whole milk appears to be unnecessarily restrictive as a means of reducing levels of fat and saturated fatty acids, especially in children's diets. Children's diets with whole milk, cheese, and ice cream replaced by their calcium equivalent in skim milk and other assumptions in Option 1 and then modified to meet the Goals contain as much as one-half more fats and oils than children ordinarily consume (table 5). Some of the fat from milk has been reintroduced into the diet as fats and oils.

**Sugar.** Sugar other than that found naturally in foods in the man's diet provides 400 calories per day and must be reduced by 25 percent, to provide 300 calories, to meet the goal. To accomplish this, quantities of sugar, sirup, jams, jellies, candies, and soft drinks are decreased to provide 140 fewer calories. The quantity of commercially prepared grain products, increased to help meet the goal for complex carbohydrate, adds over 50 calories from the sugar they contain. Sugar levels in children's diets, somewhat higher than in men's diets, would have to be reduced by as much as 44 percent to meet the goal.

**Food as served.** A day's food for a man, as served, illustrates the large quantity of grain products in diets modified to meet the Goals under Option 1 (table 6). His modified diet contains 2½ to 3 bowls of cereal or pasta and 13 slices of bread or equivalent in other bakery products, increased from 1-1/3 bowls and 8 slices in his usual diet. The woman's modified diet contains 3½ bowls of cereal or pasta and 8 slices of bread or equivalent. The larger amount of cereal in her diet is needed to help provide recommended amounts of iron.



Sample meals for a day for a man meeting the Goals with Option 1 are:

#### BREAKFAST

Cereal (2 cups) with sugar\*  
Skim milk (1 cup)  
Toast (3 slices)  
Margarine\*  
Juice (½ cup)  
Coffee or tea, if desired

#### LUNCH

Macaroni salad (1 cup)  
(contains macaroni, 1/3 egg,  
2 tablespoons kidney beans,  
salad oil)  
Vegetable (½ cup)  
Bread (3 slices)  
Margarine\*  
Milk (½ cup)

#### DINNER

Lean meat, poultry, or fish (5 ounces)\*\*  
Potato (½ cup)  
Other vegetable or salad (½ cup)  
Bread (3 slices)  
Margarine\*  
Cake  
Coffee or tea, if desired

#### SNACK

Biscuits (3)  
Juice (½ cup)

\*About 2 tablespoons of sugar or other sweets such as sirup, jams, and jellies and 3½ tablespoons of fats and oils in a day may be added to foods during preparation or at the table.

\*\*Meat and poultry or fish are served on alternate days.

For the people who may find large amounts of grain products objectionable, diets were modified to meet the Goals while holding the amounts of grain products at levels in the consumption patterns. Such diets contain large amounts of vegetables and fruits. For example, a man would buy and use each day over 3 pounds of vegetables and fruits and 2-2/3 ounces of dry legumes and nuts. His usual consumption of dry legumes would be quadrupled; of potatoes, tripled; and of other vegetables and fruit, doubled. His consumption of milk would be increased by 60 percent; and meat, poultry, and fish would be reduced by 50 percent. Obviously, diets could be modified to include some increase for grain products and

smaller increases for vegetables and fruits than those above.

The "average" man 20-54 years old can meet the Goals and his RDA while continuing to eat the quantity and selection he ordinarily consumes of any *single* food group, even the eggs and sugar and sweets groups. However, his resistance to change for a food group will result in changes for certain other food groups that are greater than shown for Option 1 (table 5). For example, he could continue to have the quantities of whole milk, cheese, and ice cream he is accustomed to and reduce fat, especially saturated fat, in his diet by other means, such as reducing further the quantities of meat, eggs, and fats and oils in his diet.

#### Diets That Meet the Goals, Option 4

Option 4 assumptions (page 15) are used to illustrate what diets meeting the Goals might be like if consumers use foods that are primarily unprocessed, low in fat and saturated fatty acids and refined and processed sugars, and high in complex carbohydrate (table 10). Generally, the diet contains skim milk; eggs, dry legumes and nuts; lean meat from Good Grade beef and flesh from poultry or other items of comparable low fat composition; vegetables and fruit; rice or varieties of other grains or flour of comparable high carbohydrate composition; soft margarine and vegetable oils; and sugar and sweets. Elimination of most of the fat from milk and meats, and the sugar and fat from grain products frees fat and sugar and the calories associated with them for use elsewhere in the diet. Much of the carbohydrate goal is provided efficiently by the 5-¼ cups cooked rice or equivalent grain or flour, leaving most of the protein goal to be provided by milk and meat. A man can have more identifiable fats and oils and sugar and sweets; however, his diet as a whole, will be less rich in fat and less sweet than the diet he ordinarily consumes.

#### Food Cost

Costs were estimated for the average food consumption patterns and for diets modified to meet the Goals and the RDA using Option 1 and Option 4 assumptions. To estimate these costs, prices paid for food by 1965-66 survey households were updated using the percentage change from the time of the survey to August



1977 in the average retail prices of about 100 foods priced monthly in U.S. cities by the Bureau of Labor Statistics. Costs apply only to diets as described in this study and cannot be used to indicate cost relationships for other diets modified to meet the Goals. These cost estimates, of course, do not allow for major shifts in price levels of foods which would almost certainly occur if demands for certain foods were markedly increased to meet the Goals.

The estimated weekly costs in August 1977 for a four-person family with average food consumption patterns and with diets modified to meet the Goals and the RDA, with Option 1 and Option 4 assumptions<sup>6</sup> are:

	Food consumption pattern	Diet to meet Goals	
		Option 1	Option 4
Child, 6-8 years	\$10.47	\$10.96	\$11.71
Child, 9-11 years	13.02	13.72	14.71
Male, 20-54 years	15.46	14.88	16.65
Female, 20-54 years	12.21	11.57	12.40
<b>TOTAL</b>	<b>\$51.16</b>	<b>\$51.13</b>	<b>\$55.47</b>

### Limitations of Interpretation

The consumer could select many combinations of foods to meet the Goals. The few combinations presented here are designed for the least deviation from average food consumption patterns for men, women, and children of different ages required to meet the Goals, taking into account suggestions for food selection made in the Committee report and alternative suggestions. Minimum disruption of average consumption patterns to meet nutritional goals is consistent with ARS's approach in developing guidance for food selection for the general public. This approach recognizes that food habits are difficult to change and assumes that food guides that least disrupt them are most likely to be followed. Other combinations of foods, arbitrarily selected to meet the Goals, might be more acceptable to some groups of people.

Consumption patterns used in developing the diets are based on data for food used at

home in 1965-66, the most recent data on national household food consumption available. Current consumption, which will be understood better from our 1977-78 Nationwide Food Consumption Survey now underway, probably differs from that in 1965-66. Annual USDA estimates of the national per capita food supply (disappearance data) can be used to indicate differences in consumption that may have occurred since 1965.

Changes in the food supply between 1965 and 1975 and changes in 1965-66 consumption patterns required to meet the Goals are shown in table 7. For this comparison quantities of food groups in consumption patterns and in diets modified to meet the Goals for the 14 sex-age categories were weighted using 1975 population estimates; then change for the average person in the population was determined. For sugar and grains an attempt was made to express quantities on a commodity basis. The change for sugar represents the change when all sugar, including that in commercially prepared products, is taken into account; and the change for grain represents the change in the grain equivalent of grain products used. No attempt was made to take the eggs and fats from commercially prepared bakery products into account.

The nutrition messages behind some of the Dietary Goals seem to have been heard and heeded by at least part of the U.S. population. Between 1965 and 1975 changes in food consumption—as indicated by the food supply—of eggs, butter, lard, margarine, vegetable oils, vegetables and fruit, and poultry and fish were in the direction of changes needed to meet the Goals. This implies that consumption has already moved toward meeting the Goals, and the changes for these foods based on 1965-66 food consumption patterns presented in this study with Option 1 may be somewhat exaggerated. On the other hand, for those foods for which the direction of change in the food supply between 1965 and 1975 is different from that required to meet the Goals—meat, vegetable shortening, sugar and sirup, grains, and milk—changes suggested in the study, with Option 1, may be underestimated.

### Conclusions

1. Few people in the United States consume diets that are as high in carbohydrate and as

<sup>6</sup>The August 1977 cost for a four-person family with diets modified to meet the Goals and the RDA under Option 3 (table 9) is \$48.53.

low in fat and sugar content as specified in the Dietary Goals proposed by the Select Committee on Nutrition and Human Needs.

2. Alternative assumptions regarding food selections within certain food groups (options) are used in modifying diets to meet the Goals and the RDA for five vitamins and two minerals. Dietary changes generally include the use of more grain products, vegetables, fruits, legumes and nuts, and less sugar, meat, and eggs. The magnitude of the changes varies considerably for some foods depending on the option used. For example, to meet the Goals with Option 1, in which assortments of foods in the food groups below are based on average household food consumption in 1965-66 except as noted for milk, fats and oils, and meat, people *on the average* change the foods they buy and use to include:

- 69 percent more grain products (grain equivalent basis)
- 25 percent more vegetables and fruit
- 21 percent more dry legumes and nuts
- 10 percent more milk, all in the form of skim milk
- about the same amount of visible fats and oils; however, soft margarine and oil replace butter, lard, and vegetable shortening which are higher in saturated fatty acids
- 59 percent less visible sugar, sirup, jams, jellies, and candies
- 25 percent less meat, poultry, and fish, with none of the drippings or separable fat from meat being consumed
- 24 percent fewer eggs

On the other hand, to meet the Goals with Option 4, in which through changes in food selection and/or production and processing, foods chosen are primarily unprocessed, low in fat and saturated fatty acids and refined and processed sugars, and high in complex carbohydrates, people *on the average* would change the foods they buy and use to include:

- 74 percent more grain products (grain equivalent basis), all of which is rice or grain of similar composition

- 43 percent more fruits and vegetables
- 39 percent more dry legumes and nuts
- 34 percent more milk, all in the form of skim milk
- 22 percent more visible fats and oils; however, soft margarine and oil replace butter, lard, and vegetable shortening which are higher in saturated fatty acids
- 10 percent less visible sugar, sirup, jams, jellies, and candies
- 6 percent less meat, poultry and fish, which is one-half Good Grade beef roast with none of the drippings or separable fat consumed and one-half poultry with only the flesh consumed, or meat, poultry, and fish of similar composition
- 7 percent fewer eggs

3. If goals are to be established for carbohydrate, protein, fat, sugar, cholesterol, and salt, such goals probably should be set separately for men, women, and children of different ages. Goals that restrict intake to a given amount per person per day of a dietary element, such as cholesterol and salt, result in diets with much more of the element per unit of energy or per kilogram of body weight for children and women than for teenage boys and men, who have greater food energy needs. Some of the Dietary Goals and suggestions for modifying diets to meet them in the Committee's report are not appropriate for use by individuals in all sex-age categories. For example, the goal for protein—to provide 12 percent of energy—is so low that a pregnant woman meeting the protein goal and her RDA for energy will not meet her RDA for protein. The suggestion that skim milk be used in place of whole milk may be unnecessarily restrictive as a means of reducing fat levels, especially in children's diets.

4. Goals based on food consumption in terms of food disappearance data are not necessarily appropriate for developing guides for amounts of foods to buy or guides for food intake of individuals to meet the nutritional needs. The intended use of the goals and the adequacy of detail on food consumption and associated food composition data are some of the factors to be considered in determining whether data on household food use, food



intake of individuals, or both should be used as the basis for goals and their interpretation in terms of food. The protein goal in the proposed Dietary Goals is an example of the importance of selection of the appropriate food consumption data base. The aim of the Committee in setting the protein goal was to retain the level in the current diet; therefore, a goal of 12 percent of energy, based on disappearance data, was established. Yet in the "current diet" as defined by USDA's 1965-66 survey on household food use, protein provides 14 percent of energy; and in the current diet as defined by the intake of individuals reported in USDA's 1965-66 survey and in DHEW's more recent Health and Nutrition Examination Survey, protein provides about 16 percent or more of energy.

### Where Do We Go From Here?

As the basis for developing food selection guides for use of the general public and in administering the food programs, USDA has made and must continue to make decisions about acceptable levels of fat, carbohydrate, protein, sugar, cholesterol, and other elements in the diet. To help in making these decisions, the Food and Nutrition Board of the National Academy of Sciences has agreed to make recommendations, even though they may be provisional, as to acceptable levels of 14 dietary elements beyond those for which RDA's

are established. Levels will be recommended for healthy men, women, and children of different ages. Among the 14 dietary elements are those covered by the Dietary Goals. The Board will include as a part of its considerations the important issues raised by the Select Committee on Nutrition and Human Needs and subsequent statements and studies. We hope to use these recommendations and the RDA's as the basis for nutritional specifications for revising the USDA food selection guides, after the information on food consumption of households and individuals from the 1977-78 Nationwide Food Consumption Survey is available.

The Dietary Goals report and discussions that it has evoked reemphasize the need for additional research—

- To determine the nutritive value of foods in the marketplace.

- To provide timely information on the food selections and nutritional status of people.

- To provide a firm basis for dietary goals for healthy men, women, and children of different ages.

- To explore adjustments in production and processing to provide foods that will be helpful in meeting such goals.

- To develop strategies and guidance materials for encouraging consumers to change their food behavior as necessary to meet the goals.



Table 6. A day's food, as served, in diets modified to meet the Goals but not necessarily the RDA,<sup>1</sup> and further modified to meet the RDA,<sup>2</sup> Option 1

Food <sup>3</sup> and unit	Meet Goals, not necessarily RDA				Meet Goals and RDA, female 20-54 years
	Child, 6-8 years <sup>4</sup>	Child, 9-11 years <sup>4</sup>	Male, 20-54 years <sup>4</sup>	Female, 20-54 years	
Skim milk (cup) .....	2.9	3.3	1.7	1.3	1.2
Eggs (number per week) ....	2.8	3.7	3.1	4.3	5.3
Mature beans or peas, cooked (tbsp) .....	1.9	2.1	2.0	1.3	1.8
Meat, boned cooked lean (ounce) .....	1.3	1.8	2.7	2.2	1.6
Poultry and fish, cooked boned (ounce) .....	1.1	1.5	2.3	1.9	1.4
Vegetables and fruit (cup)	2.0	2.5	2.6	2.3	2.5
Cereal, pasta (ounce) <sup>5</sup> ....	2.9	3.4	2.7	2.1	3.5
Bread or equivalent in bakery products (slices) .	7.8	10.1	12.9	8.6	8.0
Margarine, oil (tbsp) .....	3.4	4.1	3.6	2.5	2.9
Sugar, sweets (tsp) .....	6.0	7.0	6.7	4.7	4.7

<sup>1</sup>Recommended Dietary Allowance plus 5 percent for energy, distributed as 30 percent or less from fat, 14 percent or less from protein, 56 percent or more from carbohydrate, and 10 percent or less from sugar other than that found naturally in foods such as milk and fresh fruit. Saturated fat provides 10 percent or less of energy intake, and cholesterol intake is limited to no more than 300 milligrams per day plus 5 percent.

<sup>2</sup>RDA plus 5 percent for vitamin A value, thiamin, riboflavin, niacin, ascorbic acid, calcium, and iron.

<sup>3</sup>The assortment of meats, vegetables, and other groups of foods is based on food consumption of U.S. households in 1965-66.

<sup>4</sup>Diet modified to meet the Goals also meets the RDA for the 5 vitamins and 2 minerals studied.

<sup>5</sup>1 serving is approximately 1 ounce of dry cereal.

Table 7. Change in 1965-66 food consumption patterns required to meet the Goals and the RDA, Option 1<sup>1</sup> and change in the national per-capita food supply from 1965 to 1975

Food	Change in 1965-66 consumption to meet Goals	Change in food supply, 1965 to 1975
	<u>Percent</u>	
Milk .....	10	-8
Eggs .....	-24	-11
Dry beans and peas, nuts .....	21	1
Beef, pork, veal, lamb .....	-48	7
Poultry, fish .....	40	5
Potatoes .....	27	5
Other vegetables, fruit .....	24	7
Wheat, corn, oats, rice, and other grains .....	69	-4
Butter .....	<sup>2</sup> -100	-25
Lard .....	<sup>2</sup> -100	-53
Margarine .....	52	13
Vegetable shortening .....	<sup>2</sup> -100	23
Oils .....	73	44
Sugar, sirups <sup>3</sup> .....	-32	3

<sup>1</sup>The 1965-66 food consumption patterns for men, women, and children were modified to meet the Goals and the RDA, using assumptions defined as Option 1, and weighted by the 1975 population.

<sup>2</sup>Replaced by margarine and oils, which are higher in polyunsaturated fatty acids.

<sup>3</sup>Includes sugar in commercially prepared foods, such as ready-to-eat cereals, canned fruit sirup, and bakery products.

Table 8. Change in food consumption patterns<sup>1</sup> required to meet the Goals and the RDA,<sup>2</sup> Option 2

Food group	Child, 6-8 years	Child, 9-11 years	Male, 20-54 years	Female, 20-54 years	Person <sup>3</sup>
	<u>Percent</u>				
Milk, cheese, ice cream ....	-12	-10	4	4	1
Eggs .....	-18	-18	-64	5	-33
Dry beans and peas, nuts ...	56	58	17	44	35
Meat, poultry, fish .....	-22	-16	-23	-33	-26
Dark-green, deep-yellow vegetables .....	19	18	18	53	31
Citrus fruit, tomatoes .....	16	15	16	21	17
Potatoes .....	26	24	28	17	22
Other vegetables, fruit ....	16	15	16	26	19
Cereal, pasta .....	108	102	116	207	129
Flour, mixes .....	81	77	92	79	84
Bread .....	68	65	73	60	64
Other bakery products .....	5	5	37	-10	13
Fats, oils .....	-39	-38	-49	-34	-42
Sugar, sweets .....	-69	-71	-62	-65	-66

<sup>1</sup>Food consumption in terms of food groups defined as Option 2. Average selections within food groups as used by U.S. households in 1965-66 are assumed except (1) drippings and all separable fat from meat are discarded; (2) milk is replaced by 2-percent-fat milk; (3) butter is replaced by margarine, and lard is replaced by vegetable shortening.

<sup>2</sup>Recommended Dietary Allowance plus 5 percent for energy, vitamin A value, thiamin, riboflavin, niacin, ascorbic acid, calcium, and iron. Energy intake is distributed as 30 percent or less from fat, 14 percent or less from protein, 56 percent or more from carbohydrate, and 10 percent or less from sugar other than that found naturally in foods such as milk and fresh fruit. Saturated fat provides 10 percent or less of energy intake, and cholesterol intake is limited to no more than 300 milligrams per day plus 5 percent.

<sup>3</sup>Food consumption patterns and modified diets for 14 sex-age categories weighted by the 1975 U.S. population.



Table 9. Change in food consumption patterns<sup>1</sup> required to meet the Goals and the RDA,<sup>2</sup> Option 3

Food group	Child, 6-8 years	Child, 9-11 years	Male, 20-54 years	Female, 20-54 years	Person <sup>3</sup>
	<u>Percent</u>				
Milk, cheese, ice cream ....	-13	-12	-10	3	-3
Eggs .....	-15	-15	-65	0	-33
Dry beans and peas, nuts ...	71	73	88	60	70
Meat, poultry, fish .....	-32	-26	-26	-37	-31
Dark-green, deep-yellow vegetables .....	16	15	17	55	31
Citrus fruit, tomatoes .....	13	13	14	18	15
Potatoes .....	25	24	27	15	21
Other vegetables, fruit ....	14	13	14	24	17
Cereal, pasta .....	119	114	124	214	141
Flour, mixes .....	89	86	96	93	94
Bread .....	75	72	80	67	72
Other bakery products .....	17	16	21	-12	8
Fats, oils .....	-82	-81	-70	-56	-71
Sugar, sweets .....	-71	-73	-59	-65	-66

<sup>1</sup>Food consumption in terms of food groups defined as Option 3. Average selections within food groups as used by U.S. households in 1965-66 are assumed except drippings and one-half of the separable fat from meat are discarded.

<sup>2</sup>Recommended Dietary Allowance plus 5 percent for energy, vitamin A value, thiamin, riboflavin, niacin, ascorbic acid, calcium, and iron. Energy intake is distributed as 30 percent or less from fat, 14 percent or less from protein, 56 percent or more from carbohydrate, and 10 percent or less from sugar other than that found naturally in foods such as milk and fresh fruit. Saturated fat provides 10 percent or less of energy intake, and cholesterol intake is limited to no more than 300 milligrams per day plus 5 percent.

<sup>3</sup>Food consumption patterns and modified diets for 14 sex-age categories weighted by the 1975 U.S. population.

Table 10. Change in food consumption patterns required to meet the Goals and the RDA,<sup>1</sup> Option 4<sup>2</sup>

Food group	Child, 6-8 years	Child, 9-11 years	Male, 20-54 years	Female, 20-54 years	Person <sup>3</sup>
	<u>Percent</u>				
Milk, cheese, ice cream ....	26	27	47	30	34
Eggs .....	17	21	-51	35	-7
Dry beans and peas, nuts ...	16	23	19	88	39
Meat, poultry, fish .....	7	13	6	-29	-6
Dark-green, deep-yellow vegetables .....	31	31	43	92	63
Citrus fruit, tomatoes .....	32	31	35	49	40
Potatoes .....	34	34	37	41	35
Other vegetables, fruit ....	31	31	36	56	44
Grain <sup>4</sup> .....	45	44	54	138	74
Fats, oils .....	91	81	38	-53	22
Sugar, sweets .....	-21	-22	8	-15	-10

<sup>1</sup>Recommended Dietary Allowance plus 5 percent for energy, vitamin A value, thiamin, riboflavin, niacin, ascorbic acid, calcium, and iron. Energy intake is distributed as 30 percent or less from fat, 14 percent or less from protein, 56 percent or more from carbohydrate, and 10 percent or less from sugar other than that found naturally in foods such as milk and fresh fruit. Saturated fat provides 10 percent or less of energy intake, and cholesterol intake is limited to no more than 300 milligrams per day plus 5 percent.

<sup>2</sup>Food in terms of food groups defined in Option 4. Average selections within food groups as used by U.S. households in 1965-66 are assumed except (1) amounts of meat, poultry, and fish are adjusted to one-half Good Grade boned beef rump roast, and one-half broiler chicken and all drippings and separable fat from the roast and drippings and skin from the chicken are discarded; (2) milk and dairy products are replaced by their calcium equivalent in skim milk; (3) butter and margarine are replaced by soft margarine, and lard and vegetable shortening are replaced by vegetable oils; (4) grain products are replaced by their grain equivalent in rice--one-half raw brown and one-half white enriched parboiled rice.

<sup>3</sup>Food consumption patterns and modified diets for 14 sex-age categories weighted by the 1975 U.S. population.

<sup>4</sup>The amount of cereal in the consumption pattern is the grain equivalent of the 4 grain products food groups. Other ingredients in grain products, such as fat and sugar, are excluded from the consumption pattern.

# THE ECONOMIC OUTLOOK FOR FOOD <sup>1)</sup>

by Kenneth R. Farrell<sup>1</sup>

## Food Price Determinants

The food marketing system in the United States is a very complex part of our vast food and agricultural sector. The system has often been subject to substantial criticism. Consumers blame the system for "high" food prices. Farmers blame it for "low" farm prices. As food prices continue to rise, more people tend to perceive the marketing system as simply "charging a lot for doing very little." What then should we expect to be the relationship between farm and food prices?

Farm prices and food prices are generated in different markets, subject to different supply and demand forces. Farm prices of raw agricultural products are largely influenced by what is produced, both on U.S. farms and worldwide. What gets produced at the farm level is heavily dependent upon rather unpredictable natural forces such as the weather, pest infestations, or plant and animal diseases.

The markets in which *food* is sold operate quite differently. Processors purchase raw agricultural products at prices determined largely by relative product availability. They then add processing, transportation, and packaging services and ultimately sell a differentiated food product to wholesalers and/or retailers. Wholesalers and retailers, although they may make fewer physical changes in the product form, add still more services.

Clearly then there is good reason for some variability in movements between farm prices and prices for food. It is true that farmers contribute the raw material base for most food products; but it is also true that farm products are only one input into the food marketing process. That raw product must be converted into a form consumers are willing to purchase; it must be delivered to a place where the consumer may obtain it; and it must be available at a time when the consumer wants it. These food

marketing services involve more than just transporting, processing, and distributing farm products. Food retailers, in particular, have invested billions of dollars in the land, buildings, and equipment necessary to complete the present network of modern supermarkets. These stores have been built with the shopper in mind—wide aisles, air conditioning, and carryout services. Such services as check cashing and long operating hours (sometimes 24 hours a day) are common. Food prices must, therefore, reflect *both* the costs for the raw farm product as well as the costs involved in providing marketing services.

Consumer demand, therefore, plays a key, but often neglected, role in the widening farm-to-retail price spread. As income increases, the consumer demand for food system services can be expected to increase at a faster rate than the demand for farm output. As services become more important relative to the total product sold, the farm level price for the basic raw ingredient becomes less important. In addition, since there is a rather loosely defined biological constraint on how much food people will ingest, the food marketing system has a strong incentive to increase the service component of the products they sell. In fact, the marketing service component is their primary product.

## A Review of 1977

Food prices at retail were affected most by weather, imported food prices, marketing costs, and consumer demand. The severe winter which devastated Florida's vegetables and severely damaged its citrus crops contributed significantly to the food price rise. Imported food prices were also influenced dramatically by the weather. The coffee shortage, in particular, is noted, although a number of other items have had sharp increases too. Costs of marketing services continued to rise and either were passed on to consumers through higher prices or were partially offset by lower prices of farm commodities. Again in 1977, the consumer demand for food and related services was strengthened by increased disposable and real income.

<sup>1</sup>Economic Research Service, USDA. Condensed from a paper presented at the Food and Agricultural Outlook Conference in November 1977, at Washington, D.C. Complete copies are available from the Consumer and Food Economics Institute (see inside cover of this issue of *Family Economics Review* for address).



Retail food prices were relatively stable in 1976, but prices began to climb early in 1977. Through July an average rise of 1 percent per month had occurred. Winter vegetables and citrus fruits were contributors, but most of the increase resulted from the dramatic increases in prices of fish and imported foods, particularly coffee. By mid-1977 prices for food at home were up 7.5 percent from December 1976 with the all-food index, which includes prices of food away from home, up 7.2 percent. In the second half of 1977, larger supplies of farm commodities with lower prices to farmers but wider price spreads for U.S. farm food resulted in little change in prices of domestically produced food. Coffee prices were down 7 to 8 percent, but prices of other imported foods and fish continued to increase in the second half. Prices for food at home were about 1 percent higher at the end of December 1976 than at midyear; prices for all food were slightly higher.

For 1977, grocery prices ended the year at about a 7 percent higher level than a year earlier and averaged over the whole year about 6 percent above 1976. Price increases for away-from-home eating, which were influenced more by rising consumer demand and by increases in costs in the nonfarm sector, were up 8 percent over 1976 on the average—a slightly larger increase than a year earlier. The all-food index combining both at-home and away-from-home components averaged about 6½ percent above 1976.

Another perspective on the behavior of retail food prices can be obtained by an examination of a market basket of domestically produced food. The market basket contains 65 food items and represents the average quantities of domestic farm-originated foods bought in retail stores during a year by an urban household. It does not include foods consumers buy in away-from-home eating establishments, fishery products, or imported foods such as coffee, tea, cocoa, and bananas.

The retail cost of the market basket of U.S. farm foods averaged only about 2½ percent higher in 1977, following the 1 percent rise in 1976. Although prices at the farm level had been higher for some commodities, average returns to farmers for all market basket foods were slightly below 1976. Price spreads, the difference between what the farmer receives

and what the consumer pays, however, averaged about 4½ percent higher for 1977, reflecting lags in adjustments between farm and retail prices and rising costs for labor and other marketing related inputs. Thus, all of the 1977 increase in the retail cost of our market basket of foods produced on U.S. farms arose from wider price spreads which reflected higher marketing charges.

Although the retail price of the market basket increased moderately in 1977, some of its components showed substantial variations in price behavior. Retail prices averaged sharply higher for fresh fruits and vegetables (14 percent) and oilseed products (10 percent), reflecting tight supplies and higher farm prices for these commodities earlier in 1977 and widening price spreads toward the end of 1977. Small-to-moderate price increases for cereal and bakery products (1½ percent), processed fruits and vegetables (3 percent), and other highly processed foods were wholly attributable to higher marketing charges. Returns to farmers producing the major raw material in these products were generally lower in 1977.

### Outlook for 1978

The food outlook for 1978 is dominated by anticipated large food supplies (both domestic and foreign), increases in marketing costs, some uncertainty about the weather, energy costs, and the impact of recent or pending food legislation. Overall, food price increases in 1978 are expected to be about the same as in 1977, or slightly lower.

World grain output for the 1977-78 crop year is below 1976-77, and total world usage will be higher because of population pressures and economic growth. With the record U.S. crop, total world production is expected to be below utilization by only 4 to 6 million tons. U.S. farm production will, however, be sufficient to meet the anticipated export requirements and still provide an adequate supply of major crop commodities for domestic use.

Processed fruits and vegetables also are expected to be adequate through mid-1978, largely as a result of 1977's large crop harvests. The availability of many fresh produce items will depend on weather conditions at critical times during the growing season.

With large feed supplies available and feed prices at relatively low levels, larger supplies of

pork, grain-fed beef, poultry, eggs, and dairy products are anticipated this year. Although total beef output may be down slightly (if, as expected, cattle producers reduce the number of nonfed animals sent to slaughter) the per capita availability of all animal food products combined will match or slightly exceed the record-high levels of 1976 and 1977.

Rising wages of food processing and marketing employees and prices of other inputs purchased by food marketing firms will continue to exert upward pressure on food prices during 1978. Wages of employees in the food industry will probably increase 7 to 8 percent in 1978 as a result of prior wage settlements, cost-of-living adjustments to wages, renegotiated wage agreements, and increases in the minimum wage.

In 1978, major collective bargaining agreements covering about a quarter-million food marketing workers will expire, mostly for retail food store employees. Although only one worker in nine is included in major collective bargaining agreements, these agreements have potentially far-reaching effects on the food industry since wages of nonunion and management employees tend to follow changes in collective bargaining agreements. New wage settlements in 1978 will be strongly influenced by attempts to protect workers from further inflation and the possible loss of purchasing power. In addition to the provisions of labor contracts, increases in the minimum wage to \$2.65 per hour and higher social security withholding rates will also increase the labor costs of marketing firms.

Labor productivity should continue to increase slightly next year due to the greater volume of food marketed. This should help offset increases in wages and other cost elements. Productivity gains are likely to be greater in food processing than in food retailing. Productivity growth in food stores has been slowed by a loss of business to eating places, longer hours of operation, and the growth of service-oriented operations in supermarkets, such as bakery shops and delicatessens.

Higher prices for other services, such as energy, packaging materials, and transportation will also contribute to rising marketing costs in 1978. The stable railroad-freight rate situation for both food products and farm products that prevailed for much of 1977 ended in the fall of 1977. Rail rates during 1978 are expected to

average 6 to 7 percent above 1977 levels. Rates charged by trucks and barges are also expected to rise commensurately.

Pending legislation and international oil prices introduce considerable uncertainty into the energy situation. However, it appears almost certain that the general upward trend in these prices will continue in 1978. Increases in natural gas prices of 10 to 20 percent may result from proposed changes in the regulation of prices. Electric power rates can be expected to increase because of the cost of the required conversion of many steam-generating plants from fuel oil and natural gas to coal. The generally rising prices for all forms of energy will also exert some upward pressure on electric power rates.

Domestic demand for food is expected to continue to expand in 1978 at about the same rate as in 1977. In addition to the anticipated small increases in the population, disposable personal income is expected to increase about 9 percent, nearly identical to the 1977 increase. The overall inflation rate is likely to be about the same as in 1977. Real consumer income, therefore, would increase by about 3 percent. However, demand for automobiles, housing, and services will continue to absorb most of the overall increase in consumer income, thus moderating its impact on food demand and prices.

Producer response to new farm legislation and the recent international trade developments represent uncertainties which could affect food prices in 1978 even if the weather is good. There is, however, little doubt that the recently adopted sugar program will significantly influence U.S. food prices. It has been estimated that increasing the sugar support price to 13.5 cents per pound of raw product equivalent alone will increase domestic food expenditures in 1978 by about 0.5 percent.

Anticipated developments in the regulation of food safety and composition will also bring about changes in food marketing costs. Saccharin appears to be on the way out as a food additive—just when, no one knows—creating adjustment problems for consumers, as well as food manufacturers. The use of antibiotics and growth stimulants by livestock and poultry producers is being questioned.

Finally, the technique for measuring price increases will be changed in 1978. The Bureau



of Labor Statistics has updated the way it will calculate the Consumer Price Index (CPI). Food will be less important in the new index so that fluctuations in food prices will have less impact on the overall CPI. The composition of the food index will also be changed. In particu-

lar, the base weights will be adjusted to reflect consumer purchasing patterns for a more recent time period—July 1972 through June 1974. Just what these changes will mean for *official reports* of food price changes is still uncertain.

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From Food Safety and Quality Service, Information Division, Room 1078, South Building, Washington, D.C. 20250:

- STANDARDS FOR MEAT AND POULTRY PRODUCTS: A CONSUMER REFERENCE LIST. Revised July 1977.

From Economic Research Service, Division of Information, Washington, D.C. 20250:

- BALANCE SHEET OF THE FARMING SECTOR. AB 411. October 1977.



# CLOTHING AND TEXTILES: SUPPLIES, PRICES, AND OUTLOOK FOR 1978

by Annette Polyzou

## Trends in Clothing Expenditures and Prices: 1960-77<sup>1</sup>

Two types of data can be used in examining clothing expenditures: (1) Aggregate data on personal consumption expenditures (PCE) are supplied annually by the Bureau of Economic Analysis of the U.S. Department of Commerce. These data, which are derived from business transactions, measure total expenditures in the United States and are part of the U.S. National Income and Product accounts. The PCE data are easiest to use when they are expressed on a per-capita basis (total U.S. expenditures divided by total U.S. population). (2) Household data on family expenditures are collected through nationwide surveys, such as the Consumer Expenditure Surveys (CES) of 1960-61 and 1972-73, conducted by the Bureau of Labor Statistics of the U.S. Department of Labor and the U.S. Department of Agriculture. CES data measure average family expenditures and are available for component population groups as well as for national totals. These data, however, have only been available at about 10-year intervals.

The two types of data are not interchangeable.<sup>2</sup> The PCE data are most useful in examining trends in clothing expenditures and the CES data are most useful in developing budgets or in helping families understand their expenditures. Nevertheless, examination of the data from both sources, between 1960 and 1977, shows similar patterns with respect to total expenditures for clothing and the percent of total expenditures spent on clothing.

**Expenditures.** Per-capita expenditures for clothing and shoes, as measured by PCE data, increased in both current and constant dollars during the period 1960-77 (table 1). In current dollars, per-capita expenditures for clothing

and shoes were about 152 percent higher in 1977 than in 1960. Approximately two-thirds of this increase was caused by a rise in the level of prices and one-third by increased buying—a real increase of 51 percent in dollars of constant value. Such an increase in purchase of clothing and shoes during this period might be attributed to rising incomes as well as to a change in the composition of the population. Real disposable income was 89 percent higher in 1977 than in 1960, according to the U.S. Department of Commerce series on personal income and outlay.

The composition of the population during those years reveals an increasing proportion of individuals in the 14-34 age group (table 2). These individuals typically have high clothing expenditures that result from new clothing needs associated with sporting activities, dating, entering college, or beginning careers. Individuals in this age group also tend to be more fashion conscious than in other age groups and may thus accept fashion changes more quickly. The increase in 14-34-year-olds with generally high clothing expenditures was partially offset by a slight increase in the proportion of individuals age 55 and over. These people typically spend less on clothing than other individuals due to decreases in clothing needs and in income, which result from retirement from the labor force and from a reduced level of physical activity. Projections of the population for 1980 indicate that the composition will be virtually the same as that in 1976—the greatest proportion of the population will be individuals with the highest clothing expenditures. Thus, real increases in per-capita clothing expenditures, on an aggregate basis, are likely to continue at their present levels during the next few years and perhaps to increase as real disposable personal incomes rise. However, future increases are likely to be at a slower rate since projections indicate no further growth in the 14-34 age group.

As measured by the CES data, average family expenditures on clothing, materials, and services, including all laundry and drycleaning

<sup>1</sup> Preliminary figures for 1977—based on most recent data available during October 1977.

<sup>2</sup> For a more detailed discussion of the differences in aggregate and household data, see *Family Economics Review* December 1970.

services, were 17 percent higher in current dollars in 1972-73 than in 1960-61 (table 3). In constant dollars, however, average family expenditures dropped by about 13 percent between 1960-61 and 1972-73. That drop might be attributed to a decline in family size. Data collected separately by CES and by the Bureau of the Census show a decline in average family size between 1960 and 1970. Smaller families generally buy fewer clothes. Data from the Bureau of the Census show that average family size continued to decline during the period 1972-73 through March 1977 from 3.51 persons to 3.37 persons. That decline suggests the possibility that family expenditures on clothing may have continued to decline in recent years.

**Percent of total spending for clothing.** In both current and constant dollars, the percent of total personal consumption expenditures (PCE) spent on clothing and shoes declined during the period 1960-77 (table 1). In current dollars, clothing comprised 8.2 percent of personal consumption expenditures in 1960 and 6.8 percent in 1977. In constant dollars, clothing comprised 8.1 percent of personal consumption expenditures in 1960 and 7.7 percent in 1977. Clothing, as a percent of total personal consumption expenditures, declined at a faster rate in current than in constant dollars because prices for the all-items category of personal consumption expenditures increased at a faster rate than prices for clothing.

The CES data are consistent with PCE indications of a decline in clothing expenditures as a percent of total personal consumption expenditures. Clothing expenditures, as a percent of total consumption expenditures (table 3), were lower in 1972-73 than in 1960-61 in both current (7.8 versus 10.9 percent) and constant dollars (7.8 versus 10.2 percent).

The downward trend in clothing as a percent of total expenditures parallels a downward trend for nondurable goods in general. Expenditures have shifted away from nondurable goods toward durable goods, such as automobiles, furniture, and household equipment, and toward services, such as housing, household operation, and transportation. According to the PCE data, nondurable goods declined from 46 percent of personal consumption

expenditures in 1960 in constant dollars to 39 percent in 1977, whereas durable goods rose from 12 to 16 percent and services rose from 42 to 45 percent during the same period. The CES data show a similar trend. The trend toward durable goods may be partially attributed to an increased rate of new household formation during the 1960-77 period, resulting from a greater proportion of individuals aged 14-34 years who either live away from home before marriage or get married and form new households. The formation of new households is typically associated with increased demand for durable goods and services, such as automobiles, housing, and household furnishings.

Attitudes towards clothing also have changed in recent years. Most individuals have adopted a casual lifestyle that has brought about a relaxed attitude towards clothing. Jeans have become a major influence on apparel, as have separates that provide variety through mixing and matching garments and allow inexpensive replacement of components. There has also been greater use of active sportswear, such as jogging suits, as streetwear. Consumers' interest has also shifted in recent years from faddish items to garments with basic utility and permanence. Trade sources expect consumers to purchase a few higher priced, better quality garments with more durability for long-lasting wear rather than many lower quality faddish items.

### **Clothing Expenditures and Prices During 1977**

Consumer expenditures for clothing and shoes averaged \$373 per person during the first three quarters of 1977, according to preliminary figures (table 1). Although that amount is \$18 higher than the corresponding amount in 1976, nearly two-thirds of the increase resulted from a rise in the level of prices rather than from increased buying.

The price level for apparel and upkeep, as measured by the Consumer Price Index (CPI), averaged 4.6 percent higher during the first three quarters of 1977 than during the same period in 1976 (table 4). Increases among the three apparel subgroups averaged 4.6 percent for men's and boys' clothing, 3.3 percent for women's and girls' clothing, 4.9 percent for footwear, and 5.2 percent for other apparel commodities. Such increases for apparel items



Table 1. Annual expenditures on clothing and shoes, 1960-77<sup>1</sup>

Year	Per-capita expenditures <sup>2</sup>		Percent of expenditures for personal consumption		Aggregate expenditures	
	Constant dollars (1972)	Current dollars	Constant dollars (1972)	Current dollars	Billions of constant dollars (1972)	Billions of current dollars
1960 .....	203	148	8.1	8.2	36.6	26.7
1961 .....	203	149	8.1	8.2	37.3	27.4
1962 .....	209	154	8.1	8.1	38.9	28.7
1963 .....	209	156	7.9	7.9	39.6	29.5
1964 .....	222	166	8.1	8.0	42.6	31.9
1965 .....	227	172	7.9	7.8	44.2	33.5
1966 .....	239	186	8.0	7.9	46.9	36.6
1967 .....	236	192	7.8	7.8	46.9	38.2
1968 .....	242	208	7.7	7.8	48.6	41.8
1969 .....	245	223	7.6	7.8	49.6	45.1
1970 .....	240	227	7.4	7.5	49.2	46.6
1971 .....	249	244	7.5	7.6	51.6	50.5
1972 .....	264	264	7.5	7.5	55.1	55.1
1973 .....	281	291	7.7	7.6	59.2	61.3
1974 .....	279	308	7.8	7.3	59.1	65.3
1975 .....	288	329	7.9	7.2	61.5	70.2
1976 .....	301	355	7.9	7.0	64.7	76.3
1977 <sup>3</sup> .....	306	373	7.7	6.8	66.2	80.9

<sup>1</sup>Data shown for 1960 through 1976 differ from data given in previous papers on the outlook for clothing and textiles. The revisions resulted from changes in definitions of personal consumption expenditures (other than clothing and shoes), statistical revisions of previous estimates, and revisions in population figures for 1975 and 1976. More detailed information can be obtained from the Survey of Current Business and Current Population Reports (see sources below).

<sup>2</sup>Calculated by dividing aggregate expenditures for each year by population figures for July 1 of each year.

<sup>3</sup>Preliminary figures--average of estimates for first 3 quarters of 1977 (i.e., seasonally adjusted quarterly totals at annual rates).

Sources: U.S. Department of Commerce, Bureau of the Census, 1977, Estimates of the population of the United States and components of change: 1940 to 1976, Current Population Reports, Series P-25, No. 706 (table c). U.S. Department of Commerce, Bureau of Economic Analysis, Survey of Current Business (tables 2.3 and 2.4), 1976, 56(1), parts I and II, and 1977, 57(7); and personal communication with the Bureau of Economic Analysis.



Table 2. Composition of population by age, specified years, 1960-80

Year	Total population (in thousands)	Percent of population by age group			
		Under 14	14-34	35-54	55-65+
1960 .....	180,671	30	28	25	18
1970 .....	204,878	26	32	23	19
1976 .....	215,118	22	36	22	20
1980 <sup>1</sup> .....	224,066	21	36	22	21

<sup>1</sup>Projections.

Source: U.S. Department of Commerce, Bureau of the Census, 1977, Projections of the population of the United States: 1977 to 2050, Current Population Reports, Series P-25, No. 704, table h.

Table 3. Comparison of 1960-61 and 1972-73 Consumer Expenditure Survey data <sup>1</sup>

Item	1960-61	1972-73
<u>Current dollars:</u>		
Average total consumption expenditures .....	5,054	8,282
Average expenditures on clothing, materials, and services .....	553	647
Clothing expenditures as a percent of total consumption expenditures .....	10.9	7.8
Average family size .....	3.2	2.9
<u>Constant 1972 dollars:</u>		
Average total consumption expenditures .....	7,328	8,282
Average expenditures on clothing, materials, and services .....	747	647
Clothing expenditures as a percent of total consumption expenditures .....	10.2	7.8

<sup>1</sup>1972-73 preliminary data.

Source: U.S. Department of Labor, Bureau of Labor Statistics, 1977, Changes in consumer spending patterns, News 77-428, pp. 1-5.

Table 4. Annual percentage increase in selected indexes of consumer prices, 1973-77

Consumer Price Index component	1973	1974	1975	1976	1977 <sup>1</sup>
All items .....	6.2	11.0	9.1	5.8	6.4
Apparel and upkeep <sup>2</sup> .....	3.7	7.4	4.5	3.7	4.6
Men's and boys' clothing .....	3.7	7.9	4.3	3.5	4.6
Women's and girls' clothing .....	3.5	6.0	2.4	2.8	3.3
Footwear .....	4.2	6.1	4.4	4.0	4.9
Other apparel commodities <sup>3</sup> .....	--	--	--	--	5.2

<sup>1</sup>Preliminary estimates--average for first 3 quarters of 1977 compared with the average for first 3 quarters of 1976.

<sup>2</sup>Also includes infants' wear, sewing materials, jewelry, and apparel upkeep services, for which indexes are not available.

<sup>3</sup>Developed in 1976 to include diapers, yard goods, earrings, wrist watches, and zippers.

Source: U.S. Department of Labor, Bureau of Labor Statistics, 1977, News, Consumer Price Index (monthly issues); and personal communication with the Bureau of Labor Statistics.

were less than the 6.4-percent increase for all items of the CPI.

Retail sales of apparel were generally weak during the first quarter of 1977. Abnormally cold weather during January and early February caused an increase in home-heating fuel usage as well as a rise in fuel prices and in weather-affected food prices, thus reducing consumers' discretionary income for retail purchases. The severe cold did strengthen sales of sweaters, thermal underwear, hats, and gloves. As the effects of the severe weather abated and personal income increased substantially during the latter half of the first quarter, consumer spending rapidly increased. Strong sales of durable goods, mainly automobiles, major appliances, and furniture, indicated that consumers may have purchased such big-ticket items in anticipation of future price increases resulting from the rise in fuel prices. Consumers also invested in such home improvements as storm windows and home insulation, presumably to reduce energy usage.

This trend continued to be strong during the second quarter, affecting sales of automobiles, appliances, garden and nursery equipment, sporting goods, and related items. Various trade sources cited several possible reasons for the weak apparel sales during most of the second quarter:

- Consumers' resistance to higher prices of apparel.
- Consumers' strong interest in housing and automobiles.
- Consumers' concern about energy and long-term inflation.

Retailers responded to sluggish apparel sales by promoting aggressively and cutting prices in hope of creating some consumer interest. Retailers also kept inventories lean and depended on quick delivery of fast-moving items. Unseasonably warm weather during May created strong consumer demand for active sportswear and athletic footwear for all family members. Other factors that influenced the growth of active sportswear during this period included increased use of such sportswear as streetwear, increased attention on physical fitness, and continued emphasis on sports activities as social affairs.

The sales pattern of the third quarter again favored durables (especially automobiles) over soft goods, although apparel sales strengthened somewhat during this period. Consumers responded well to clearance prices on summer items and back-to-school merchandise early in the quarter. Retailers realized that consumers had been increasingly more price conscious throughout the year. Thus, they stressed price over fashion during the back-to-school season and offered basic merchandise such as corduroy and denim jeans, knit tops, flannel shirts, shetland pullovers, and down jackets and vests at competitive prices.

According to several trade sources, prices for most fall apparel items for men and women were 5 to 15 percent higher than a year ago. Higher prices of fall apparel mainly reflected increased costs for such natural fibers as cotton, wool, silk, and cashmere, as well as increased yardage for the fuller fashions for women—tiered and double skirts, full dresses, and big blouses. Consumers did not seem adverse to spending extra money for better quality apparel, which suggested that they may be viewing the purchase of apparel as an investment. Retailers cited some price resistance toward lower and moderately priced apparel during the fall season, and they responded with aggressive advertising and promotion and tight control of inventories.

The seasonally adjusted wholesale price index for apparel rose 0.7 percent during the period June through September. This indicates the probability of price increases for apparel at the retail level during the months ahead.

With higher prices of apparel, consumers may wish to take advantage of this year's fashion emphasis on separates and create ensembles from jackets, vests, sweaters, shirts, pants, and skirts coordinated by color, fabrication, or both. Consumers can also stretch their clothing dollar by using the separates concept to build on last year's wardrobe. Also, with the onset of cold weather, consumers can use apparel as an insulation against the cold and as an aid in saving fuel costs by layering garments and wearing sweaters.

### Prices and Use of Fibers During 1977

U.S. per-capita mill use of natural fibers was lower in 1977 than in 1976, while mill use of synthetic fibers was higher. Estimated U.S.



per-capita mill use of all fibers in 1977 (based on data for the first 9 months) is about 55.5 pounds, including 14.5 pounds of cotton, 0.5 pound of wool, and 40.5 pounds of synthetic fibers. This compares with 1976 per-capita use of 54.1 pounds, including 15.9 pounds of cotton, 0.6 pound of wool, and 37.6 pounds of synthetic fibers.

The natural look in clothing has continued to be important during the year, but high prices of cotton and wool, relative to prices of synthetic staple fibers, have influenced textile mills to achieve natural looks with blended fabrics containing a higher percent of synthetic fiber. This is apparent in the denim market, where mills are offering denims in 80/20 and 65/35 cotton/polyester blends. Blends now account for nearly 30 percent of the denim market. Even corduroy, which has traditionally been all-cotton, is being offered in blends of 84/16 cotton/polyester and of 50/50 cotton/polyester. Other natural-looking fabric blends available in the market for men's and women's clothing include polyester blended with wool, silk, linen, viscose rayon, and acrylic, as well as acrylic blended with wool.

Research in the area of textiles is focusing on the development of easy-care synthetic fabrics with a natural hand. Texfi Industries<sup>3</sup> recently introduced such a synthetic fabric—a lightweight all-polyester fabric coated with a finish to allow moisture absorption. Another recent development, air texturizing, fluffs up acrylic yarn to impart a mohairlike appearance to the fiber.

U.S. mill consumption of cotton for the first 9 months of 1977 was about 9 percent lower than during the same period in 1976. Mill use of synthetic staple fibers increased about 8 percent over 1976. The decline in mill consumption of cotton was attributed to the rather static textile activity and relatively high cotton

prices in relation to synthetic staple fiber prices.

Mill-delivered cotton prices declined from a high of 83 cents per pound in March to 57 cents in September. This is about the same price that mills are presently paying for synthetic staple fiber. The decline in cotton prices during this period was mainly due to prospective abundant supplies of cotton in relation to weakening demand. The 1977 cotton crop was about one-fourth larger than the 1976 crop due to increased cotton acreage and favorable growing conditions during the summer. Diminished domestic demand for cotton is reflected in the decline in mill consumption of cotton, as previously mentioned. Foreign demand for cotton has also weakened. Exports of cotton during the 1977-78 marketing year are expected to total slightly below last season's 4.8 million bales. However, currently lower cotton prices are expected to stimulate U.S. mill consumption of cotton in 1978 and may reverse the trend toward cotton/polyester blends in the denim market.

Mill consumption of raw apparel wool during the first 8 months of 1977 was about 12 percent lower than during the same period in 1976, reflecting a shift to higher synthetic fiber content in blends due to high wool prices. Average U.S. farm prices for wool declined, from a high of about 75 cents per pound in January to 71 cents in September, but were still above 1976 wool prices.

Shipments of synthetic fibers by U.S. producers during the first 8 months of 1977 were approximately 11 percent higher than in the same period in 1976, according to *Textile Organon* (September 1977). According to fiber producers, price increases during the year for selected acrylic, rayon, nylon, acetate, and polyester fibers mainly reflected increased costs of energy, raw materials, and labor. Currently, acrylic is benefiting from strong fall and holiday sweater sales; nylon is benefiting from strong sales of down nylon parkas, skiwear, and other sports outerwear; and polyester is benefiting from a revived interest in polyester/rayon slacks as well as a shift in production from all-cotton to cotton/polyester denims.

<sup>3</sup> Reference to a company name is used in this publication solely for the purpose of providing specific information. Mention of a company name does not constitute a guarantee or warranty of the company by the U.S. Department of Agriculture or an endorsement by the Department over other companies not mentioned.

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## MONEY INCOME OF U.S. FAMILIES, 1970<sup>1</sup>

The median income of all families in the United States was \$14,960 in 1976, an increase of 9 percent over the 1975 median. After adjusting for price increases, real median family income increased by 3 percent between 1975 and 1976. This 3 percent increase, however, marks a sharp reversal from the downward trend that prevailed between 1973 and 1974, and between 1974 and 1975, when real median family income decreased by 4 and 3 percent, respectively.

White families had median incomes of \$15,540 in 1976 compared with \$9,240 for

black families and \$10,260 for families of Spanish origin. Of all persons 14 years old and older, about 92 percent of the men and 73 percent of the women received income in 1976. Men and women who received incomes in 1976 had median incomes of \$9,430 and \$3,580, respectively.

There were about 25.0 million persons below the poverty level in 1976, comprising almost 12 percent of the U.S. population. Overall, the poverty-level population decreased by about 3.5 percent from the 1975 figure. The poverty threshold for a nonfarm family of four in 1976 was \$5,815.

<sup>1</sup> Money income includes amounts received from earnings; social security and public assistance payments; supplemental security income; dividends, interest, and rent; unemployment and workmen's compensation, government and private employee pensions; and other periodic income.

Source: U.S. Department of Commerce, Bureau of the Census, 1977, Money income and poverty status of families and persons in the United States: 1976, *Current Population Reports*, Series P-60, No. 107.



# OUTLOOK FOR HOUSING

by Marshall A. Kaplan<sup>1</sup>

Before I get to the housing outlook for 1978, let me discuss briefly housing developments in 1977. Last year was a stronger year for housing than almost anyone was willing to predict late in 1976. It was an especially exceptional year for single-family housing starts, which exceeded 1.4 million units for the year as a whole compared with 1.16 million units for 1976. Apartment starts showed a larger percentage increase from 1976, but this was from a much lower base. Hence, apartment starts, defined to include structures with two or more units, will probably total only about 550,000 units. Finally, we have shipments of mobile home units, another major type of housing unit. These will not show nearly the same degree of improvement as the more conventional type of housing units and will probably total about 260,000 units in 1977.

There is a natural tendency to focus on construction of new units. We often tend to forget that there are usually three existing houses sold for each one new house sold. Existing home sales reached a new peak level in 1977 and totaled about 3.58 million units. This is a tremendous turnover in existing homes and indicates a high degree of mobility on the part of American households. The strength in single-family housing starts and existing home sales are very much interrelated. This is because a large percentage of new homes being constructed are being sold to households who already own an existing home and are able to sell it readily at a favorable price in the kind of market that we had in 1977. Also, first-time home buyers are entering the housing market to a much greater degree than usual via the existing home market rather than the new home market. What we had at work in 1977 was a strong upgrading phenomenon, as owners of existing homes took advantage of the large equity built up because of rising home prices and used this to purchase better homes that were often newly constructed. In addition, expenditures

designed to improve existing homes through additions and alterations rose sharply in 1977.

We hear a great deal of rhetoric about the average American being priced out of the home market. However, the reality is that more Americans are buying homes than ever before, and new homes being built indicate a continuing trend toward larger homes built on larger lots. Much of this reflects upgrading by existing homeowners, but, while no firm statistics on this exist, I would surmise that at least the same percentage of new households and renters are purchasing homes as have done so in recent years. If anything, younger households have a more sophisticated attitude toward the investment potential of homeownership and are more inclined to make financial sacrifices to own a home at an early age. Single people and unrelated individuals are also becoming a more important factor in single-family housing demand as a result of both the later age at which the first marriage takes place and the high divorce rate. A lot of people whose age or marital status would normally dictate apartment living are now opting for homeownership or at least condominium ownership in apartment projects.

We hear a great deal about a return to the cities and a rehabilitation of many older city neighborhoods. It is true that a fair number of neighborhoods in older central cities are undergoing some degree of renaissance. However, in terms of number of people, it is not yet that substantial. As a matter of fact, if we look merely at population statistics, there continues to be a trend away from older central cities and even a slowing down in suburban growth along with an influx of people into rural areas. The term "rural areas" is probably a misnomer, since some of these are probably counties on the peripheries of existing metropolitan areas and merely represent an expansion beyond the more built-up suburban areas. If you look at construction patterns in major metropolitan areas, you find a continued trend further away from central cities. In large part this is related to the fact that employment opportunities have been shifting away from central cities and even from traditional suburban areas. We have

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<sup>1</sup> Director, Special Studies Division, Office of Economic Research, Federal Home Loan Bank Board. The views expressed in this paper are those of the author and not necessarily those of the USDA.



a whole generation of people growing up who have had little contact with cities and are perfectly willing to move even further away from cities where they often no longer work or shop.

This trend is not inconsistent with some degree of revitalization going on in older, mature cities. The reason is that this revitalization does not necessarily bring with it an increase in population in cities but, in fact, may have the opposite effect insofar as larger families are displaced by single people and mature adults whose children have grown up. It is true that some young households are beginning to rediscover the virtues of city living, but the large percentage of households with children at home and going to school still prefer not to live in the city. Current trends in housing construction indicate that Americans still want a large house on a large site during much of their life cycle.

### Outlook for 1978

I would now like to turn to the outlook for housing construction for 1978. As usual, this depends on the economic and financial assumptions that we make. My own assumption is that we can expect a more rapid growth in the economy in 1978 than we had during the second half of last year. However, the reluctance of businesses to expand plant and equipment spending substantially will keep us from having an overheated economy. There is nothing on the horizon to indicate that the underlying inflation rate will fall below 6 percent. While the inflation rate has tapered off recently, this has been influenced more by shortrun developments with respect to food prices and certain other consumer goods prices and appears not to reflect any weakening of basic inflationary forces in the economy.

On balance, the kind of an economy that I have sketched for 1978 should lead to moderately rising interest rates and will produce a tapering off in savings flows into savings and loan associations and other mortgage lending institutions as the year progresses. This adverse impact will not be as sharp as it was during the tight credit periods of 1973 and 1974 for a number of reasons. First, I do not believe that short-term interest rates will go as high as they did during those years. Secondly, a much more substantial portion of savings and loan

accounts is now in long-term certificates where a withdrawal carries with it a substantial penalty rate. Thus, while rising interest rates will reduce the volume of new savings that flow into savings and loan associations, it will not produce any really massive shift of funds from savings and loan associations into other types of savings instruments.

However, I am not arguing that there will not be an adverse impact on housing credit availability. It is merely that, at the moment, any such adverse impact does not look like it will be nearly of the same magnitude as during 1973-74. In addition, savings and loan associations, which currently account for about 55 percent of all long-term residential mortgages originated, will be able to cushion any adverse impact of a slowdown in savings to a considerable extent by drawing down liquidity. It is likely that the Federal Home Loan Bank System is in a good position to provide a substantial amount of borrowings or so-called advances to member savings and loan associations to offset at least some of the impact of a slowdown in savings flows.

My own feeling is that the adverse impact of tight credit on housing is likely to be mild during much of 1978 and will be delayed because of the time lags involved before reduced savings flows lead to a lower level of mortgage lending. This is because savings and loan and other mortgage lending institutions already have a high level of forward mortgage loan commitments. Most major builders are already assured of the necessary financing to continue a high level of starts into at least the early part of 1978. Strong housing sales in 1977 caused many builders to have a backlog of sold but unstarted units. This will sustain the very high level of single-family starts through at least early 1978.

In part, my optimism about the housing outlook is the result of what I see to be the result of the strong underlying demand for housing that will lead households to continue to buy houses at a rapid rate even with some rise in mortgage interest rates. Single-family housing sales and starts will still undoubtedly decline before mid-1978 progresses. However, the decline will not be too sharp, and it will be offset to some extent by what I believe is a likely continued increase in apartment starts.

This will occur partly because of current Federal subsidy programs in the apartment sector, primarily the Section 8 housing assistance program.<sup>2</sup> In addition, it will reflect a very tight rental market in most metropolitan areas and the fact that builders who plan to put up apartment structures in 1978 have probably already obtained forward loan commitments at the interest rates that have prevailed over recent months.

Despite a significantly higher level of apartment starts that I foresee in 1978 compared to 1977, such starts will still be considerably below the peaks reached in the early 1970's. This is inevitable because the high levels of apartment construction during the 1970's reflected overbuilding. Moreover, despite the tightness of rental markets in most metropolitan areas, rent levels have not risen to the point where apartment construction produces an adequate return to the investor in most housing markets. The existence or threat of rent control will also hold down apartment construction in certain markets.

What does this imply with respect to the likely level of housing starts in 1978? I think that this implies, at most, a slight decline from calendar year 1977 to calendar year 1978. Private housing starts are currently estimated to be 1.98 million units in 1977. While I expect single-family starts to be about 150,000 units less in 1978 than during 1977, I expect apartment starts to be at least 100,000 units above the level of 1977 and perhaps even greater than that. Thus, on a calendar-year basis, total housing starts in 1978 may not differ much from that in 1977. However, housing activity is likely to be stronger in early 1978 than in the later months.

### Alternative Mortgage Instruments

I would like to touch briefly on the role that alternative mortgage instruments will play in

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<sup>2</sup> Created in Title II of the 1974 Housing and Community Development Act, the Section 8 program provides rental assistance payments to owners (who may be private developers, nonprofit corporations, co-ops, or public housing agencies) of new or existing dwellings on behalf of lower income families.

affecting the ability of households to purchase homes. Congress has already authorized a permanent program of graduated payment mortgages with Federal Housing Administration (FHA) insurance. It is possible that graduated payment mortgages may be offered on a nonfederally insured basis, too, although the likelihood of this depends on the willingness of private mortgage insurance companies to charge reasonable insurance fees on graduated payment mortgages that bear a low downpayment. It is not clear yet what the outlook will be with respect to this possibility.

As many of you undoubtedly know, graduated payment mortgages are so tailored that payments in the early years of the mortgage are not large enough to cover the amortization of the mortgage. Hence, the homeowner's equity actually declines for a number of years. Depending on the way the mortgage is written, the mortgage payments can rise each year, or, alternatively, rise after the first 5 or 10 years. This rising pattern of mortgage payments corresponds to the rising income that many households can expect over their life cycle. It results in a lower monthly payment in the early years of the mortgage when a typical household is at a low level in its earning cycle. We will be hearing much more about the graduated payment mortgage as time goes on.

In addition, there is a great deal of interest in the reverse annuity mortgage. This is essentially a means by which a retired homeowner can continue to live in his or her house with guaranteed annuity payments based on the equity of the house. This solves the current dilemma that many households face when they are retired. This is the need to sell their home and realize the equity in it in order to have an adequate retirement income. The reverse annuity mortgage permits continued occupancy of a house at the same time that it makes it possible for the homeowner to obtain a monthly income based on the equity that has been built up in the house.

Any widespread growth in the use of graduated payment and reverse annuity mortgages will obviously have an important impact on the financial options open to consumers.



# THE OUTLOOK FOR THE LABOR FORCE: IMPLICATIONS FOR FAMILIES

by Deborah Pisetznier Klein<sup>1</sup>

In recent years we have all heard on television and read in newspapers and magazines about the demise of the American family. Stories on rising levels of marital disruption due to divorce and separation and the prevalence of nontraditional living arrangements among young people have filled the media. These stories were clearly based on facts and reflect real changes in living arrangements for many people. However, most people continue to live in families. Among the 74 million households in the United States, there are about 56 million families.<sup>2</sup>

Nevertheless, it is important to recognize that great social changes have occurred within these families. One important facet has been alterations in labor-force behavior. The "typical" family is often illustrated as a working husband, a homemaker wife, and two children. This family type is now far from typical. In fact, in 1976, only 6 percent of all families conformed to this pattern. Even more surprising is the fact that only 15 percent of American families depended on a single earner and consisted of a working husband, a wife who did not engage in market work, and any number of children under 18 years of age.

Why is the single-earner, four-person family so atypical? In part, it is because some families have passed through this stage or have yet to enter it. Also, the rising divorce rates that have been mentioned earlier have had an impact. But the most important change is that there are now more multiple-earner families than single-earner families. And the major cause of that statistic has been the phenomenal increase in the labor-force participation of married women.

Since 1950, the proportion of women engaged in or seeking market work climbed from about one-third to nearly one-half. While the overall surge has been generally steady, noticeable differences occurred in the timing for different age groups. Prior to World War II, the highest rates of female participation were among the young, because most women left the paid labor force upon marriage. In the post-war era, this pattern changed. There was a sizable jump in the participation of women aged 45 to 59, the group which had largely completed the time-consuming portion of their child-rearing responsibilities.

Since the mid-1960's, the greatest labor-force increases have occurred among women under age 45. These women, who often have young children, apparently did not decide to pursue market work until attitudes changed toward working mothers.

Furthermore, changes in fertility and child-spacing patterns during the 1960's are associated with the increased likelihood that those in their twenties would work. Currently, about 60 percent of women in their twenties, and more than half of those aged 30 to 45, are in the labor force. Among those over 55, there have been small declines in the 1970's, indicating that some women may be choosing earlier retirement.

The dramatic increase in female labor-force participation is related at least in part to an overall decline in participation among men. While the male rate remains substantially above the female rate, the gap has narrowed considerably, particularly at the younger and older end of the age spectrum. Clarence Long postulated as early as 1958 that the trends in male and female participation were related: "Women may have both pushed and pulled young and elderly males from the labor force, to some extent seeking jobs that had been or were being sought by males, and to some extent being drawn into the labor force by the vacuum left by the exodus of males for other reasons."<sup>3</sup> He

<sup>1</sup> Office of Current Employment Analysis, Bureau of Labor Statistics, U.S. Department of Labor. This paper draws upon the work of many staff members in the Office of Current Employment Analysis. In particular, the author would like to note the contributions of Robert W. Bednarzik and Allyson Sherman Grossman. The views expressed in this paper are those of the author and not necessarily those of the USDA.

<sup>2</sup> The remaining households consist of persons who live alone or with persons to whom they are not related.

<sup>3</sup> Long, C., 1958, *The Labor Force Under Changing Income and Employment*, Princeton University Press, pp. 23-24.



went on to suggest that better trained (and lower paid) women may have displaced older men, and the financial assistance of a working daughter or wife possibly permitted the man to retire at a younger age.

Thus, the biggest changes among men have occurred in the older age groups and have been attributed primarily to earlier retirement. For example, more than two-fifths of men over age 65 were in the labor force in 1950, compared with only one-fifth in 1976. The rate for men aged 55 to 64 dropped from 87 to 75 percent over the same period. Participation rates remain well above 90 percent for men in the prime working ages—25 to 54 years—but even in these age groups there have been some slight declines, most noticeably since the mid-1960's.

Let us return to our focus on the family. Just as changes in labor-force behavior affect family dynamics, so have changes in rates of family formation and dissolution contributed to the labor-force statistics just discussed. Single men, for example, have a lower rate of labor-force participation than do other men, and their increasing proportion in the population has contributed to lower participation for men as a whole. Similarly, the increased proportions of divorced and never-married women have contributed to greater overall female labor-force participation because these groups are generally more likely to engage in paid work. Nevertheless, the most dramatic increases in female labor-force participation have occurred among wives—the number of married women in the labor force nearly tripled between 1950 and 1976. One important factor in this development was fertility patterns.

From the mid-1950's to the present, the fertility of American women dropped from near record highs to record lows. This decline in fertility, which, of course, translates into smaller families, is also associated with the increase in female labor-force participation. In the mid-1970's only about one-third of the wives with three children or more under age 15 were in the labor force, compared with about half of the wives with only one child in that age group. Nevertheless, despite the presence of children, even young children, women are working in record numbers. For example, the proportion of married women in the labor force with school-age children nearly doubled

between 1950 and 1976, and the participation rate of wives with preschool children tripled.

Looking at the figures another way, from the perspective of the children, we can see that about 45 percent of all children living with two parents had a working mother. Younger children are less likely than older ones to have working mothers. Only about one-third of the preschool children living in husband-wife families had working mothers compared with nearly half of those 6 to 13 years of age and more than half of all those 14 to 17 years.

Family responsibilities also affect the labor-force status of men, but in different ways. Regardless of the presence or number of children, nearly all married men between 25 and 55 are in the labor force. Furthermore, married men in these ages are more likely than other men to work long hours and to hold second jobs. Reflecting the fact that family responsibilities increase the need for family income, 34 percent of the moonlighting married men but only 15 percent of other men had taken their second jobs to meet regular expenses.

Studies have indicated that the impact of children on the labor-market activities of men is greatest in the older years when many delay retirement until their last child leaves home or completes school. This hypothesis is supported by William G. Bowen and T. Aldrich Finegan's finding that the larger the family, the higher the labor-force participation rates of married men over age 55.<sup>4</sup>

We cannot discuss family labor-force behavior without focusing on another type of family—that headed by a woman. These families are most often single-parent families that consist of a mother and her children. Since 1970, the number of such families increased by one-third to 7.5 million in 1976. Currently about one out of every eight families is headed by a woman and about half of these women are in the labor force, where they face higher than average unemployment.

About half of the female family heads are either divorced or separated from their husbands, about one-third are widowed, and the remainder have never been married. (Married women living with their husbands are not

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<sup>4</sup> Bowen, W. G., and Finegan, T. A., 1969, *The Economics of Labor Force Participation*, Princeton University Press, p. 296.

ncluded in this classification.) Divorced women have the highest labor-force participation of any marital category. The proportion working is particularly high—about 80 percent—for divorced women with school-age children (and no children younger). Separated women have a lower participation rate; about 60 percent of separated women with school-age children (and none younger) are in the labor force. Widowed women have the lowest rates of labor-force activity. These women tend to be older, many of them above the typical retirement age, and they often have other financial resources such as social security payments.

Separated women face very high jobless rates, in part because they are relatively younger, less educated, and have more and younger children. Unemployment among divorced women averages just a little higher than that of wives.

Looking at the employment status of family members in relation to each other, we see some further confirmation of the extent to which traditional assumptions about the family no longer hold true. For example, less than half of all husbands are the only breadwinner in the family. Perhaps even more striking is the fact that about one-tenth of employed wives are the only earner in their family. Thus, when a husband becomes unemployed, the chances are about 50-50 that there is someone else in the family who is holding down a job. For unemployed wives, of course, it is more likely that some other family member is employed. Nevertheless, in about 15 percent of families where the wife is unemployed, there is no other working member. Furthermore, wives with unemployed husbands are about three times as likely as other wives to be unemployed themselves. The situation is very severe among unemployed female family heads—more than 80 percent of them have no one else in their family who is employed.

The labor-market problems of female-headed families are underscored when we look at the unemployment rates of relatives in these families, primarily teenage and young-adult children of the head. Their rates are much higher than those of comparable young people living in husband-wife families, and they are less likely to live in a family that includes a working member.

As we have seen, the family with more than one earner has become prevalent throughout the Nation. The phenomenon has had pronounced effects on the living standards of American families. In 1976 the median income of all husband-wife families was \$14,870. For husband-wife families with wives in the paid labor force the median income was \$17,240; this was 35 percent higher than the median income for husband-wife families in which the wives were not in the paid labor force. A recent publication by Paul Glick and Arthur Norton indicated that while most husbands earn considerably more than their wives, this is not universally the case.<sup>5</sup> In about two-thirds of all families where both husband and wife worked in 1975, the husband had "perceptibly higher" earnings. In the remaining third, the wife earned about what her husband did or more. It should be noted, however, that in most cases where the wife earned appreciably more than her husband, his earnings were relatively low.

In part because of the relatively fewer members of working age, families headed by one adult, either male or female, have lower incomes than husband-wife families. Female-headed families, in particular, have very low incomes—a median of \$6,840 in 1976. Furthermore, more than one-third of all female-headed families had incomes under \$5,000 in 1976, compared with 13 percent for families headed by a man (with no wife present) and 8 percent for husband-wife families.

### Looking Ahead

It seems reasonable to conclude that developments in family formation, multi-earner families, income needs, educational attainment, and retirement patterns will not reverse the current trends of increasing participation among women and decreasing participation among men. These labor-force developments will have substantial impact on the family. For example, the most recent Bureau of Labor Statistics projections indicate that between 1975 and 1990 nearly 12 million women will be added to the labor force. Since most of the increase is expected to occur among women in

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<sup>5</sup> Glick, P. C., and Norton, A. J., 1977, Marrying, divorcing, and living together in the U.S. today, *Population Bulletin* 32(5), 41 pp., (Population Reference Bureau, Inc., Washington, D.C.).



the central ages—25 to 54 years—and since the majority of these women are married, we can expect that the trends described above will continue; that is, more families will have more than one earner and a greater proportion of children will have working mothers. The decline in the participation rate for men over 55 years of age, which is projected to continue, may have implications for the financial well-being of families at the older age of the spectrum.

These developments tend to reinforce each other. Thus, as women's participation in the labor force is increased, they are more likely to become even more firmly attached to the labor market, unwilling to give up the income needed to maintain or increase consumption in the wake of rising prices or to leave promising

careers to raise a family on a full-time basis. Moreover, any tendencies on the part of women to become more established in the work force would tend to increase the flexibility of men's labor-market experience. For example, with additional family retirement income, men as well as women could retire at an earlier age. The presence of wives and younger family members in the labor force cushions the impact of male unemployment on the family. This could permit the labor-force participation of men to become more responsive to economic conditions than it has been in the past.

While these trends are exciting to contemplate, we must guard against pushing them too far into the future. The longer the perspective we try to take, the more likely that unforeseen events will have an impact.

## U.S. POPULATION, 1976

The total population of the United States on January 1, 1977, was estimated to be about 216 million, an increase of 1.6 million, or 0.7 percent, over the 214.4 million on January 1, 1976. In 1976 the birth rate remained at its lowest level in U.S. history—14.7 per 1,000 population—and the total fertility rate dropped to 1,760 children per 1,000 women, the fifth consecutive year in which the measure of annual fertility reached a new low in the United States. Several factors have contributed to the declining fertility rate—more young adults are postponing marriage, young married women are postponing childbearing, and there are more divorces: about one-third of married persons between 25 and 35 years of age may end their first marriage in divorce. The declining birth rate has caused a 12-percent drop in elementary school enrollment in the last 6 years. High school and college enrollments, however, have increased by 7 percent and 35 percent, respectively. College enrollment of women 25 to 34 years of age increased from 409,000 in 1970 to 971,000 in 1976.

Between 1970 and 1976 the population in metropolitan areas increased by 5.5 million persons (4 percent), while that in nonmetropolitan areas increased by 5 million persons (8 percent). The faster rate of growth of nonmetropolitan areas which began about 1970 is a reversal of the long-term population trend of past decades. Central cities of metropolitan areas lost 4.6 million persons and gained only 2.7 million through internal migration between March 1975 and March 1976. Of those leaving the central cities, three times as many persons went to the suburbs as to nonmetropolitan areas. One reason for the loss of population in the central cities since 1970 is a decline in the white population, which exceeded the increase in the population of black and other races in central cities.

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Source: U.S. Department of Commerce, Bureau of the Census, 1977, Population profile of the United States: 1976, *Current Population Reports*, Series P-20, No. 307.



## THREE BUDGETS FOR A RETIRED COUPLE, AUTUMN 1976

The Bureau of Labor Statistics (BLS), U.S. Department of Labor, has updated to autumn 1976 its three hypothetical annual budgets for a retired couple and related area-cost indexes that can be used to compare the cost of these budgets in selected urban areas. This updating reflects changes in prices between autumn 1975 and autumn 1976.

In the autumn of 1976, the estimated U.S. average annual cost of the lower level budget for an urban retired couple, excluding personal income taxes, amounted to \$4,695. At the intermediate and higher levels, the budget costs amounted to \$6,738 and \$10,048, respectively. Costs for all the budgets are about 4.5 percent greater than the estimated budget costs for the autumn of 1975.

The increase in food prices from autumn 1975 to autumn 1976 was approximately 1 percent at the lower level and less than 1 percent at both the intermediate and higher levels, compared with increases of 7 and 8 percent a year earlier. Transportation costs rose the

most—approximately 9 percent for each budget level—as a result of large cost increases for both public and private transportation. Housing costs rose at approximately the same rate—6.5 percent—for all three budget levels but was more apparent at the higher level because the proportion of the total cost of consumption accounted for by housing is larger at that level.

The updated budget costs represent the costs at autumn 1976 prices of three hypothetical lists of goods and services that were specified in the mid-1960's to portray three relative levels of living—simply termed lower, intermediate, and higher—for a retired couple. The cost of the lower budget is not intended to represent the income necessary for subsistence at the poverty level, but simply represents a level relatively lower than the intermediate budget.

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Source: U.S. Department of Labor, Bureau of Labor Statistics, 1977, Three budgets for a retired couple, autumn 1976, *News*, USDL 77-790.

## CONSUMER EXPENDITURE SURVEY: DIETARY SURVEY

The Bureau of Labor Statistics of the U.S. Department of Labor has announced the availability of the final results of the Diary component of the 1972-73 Consumer Expenditure Survey. These results substantially expand a previous release by showing (1) sources of annual income and (2) weekly expenditure detail for over 60 individual food items and more than 30 nonfood items. Data are presented for the

United States as a whole, for each of four regions, and by selected family characteristics.

*Consumer Expenditure Survey: Diary Survey, July 1972-June 1974*, BLS Bulletin 1959, is for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402. Price: \$5.50 (stock No. 029-001-02052-0).

## Sex-age groups

<sup>1</sup>Assumes that food for all meals and snacks is purchased at the store and prepared at home. Estimates for each plan were computed from quantities of foods published in the Winter 1976 (thrifty plan) and Winter 1975 (low-cost, moderate-cost, and liberal plans) issues of *Family Economics Review*. The costs of the food plans were first estimated using prices paid in 1965-66 by households from USDA's Household Food Consumption Survey with food costs at 4 selected levels. These prices are updated by use of "Estimated Retail Food Prices by Cities" released monthly by the Bureau of Labor Statistics.

adjustments are suggested: 1-person--add 20 percent; 2-person--add 10 percent; 3-person--add 5 percent; 5-or-6-person--subtract 5 percent; 7-or-more-person--subtract 10 percent.



# CONSUMER PRICES

Consumer price index for urban wage earners and clerical workers

(1967 = 100)

Group	Dec. 1977	Nov. 1977	Oct. 1977	Dec. 1976
All items .....	186.1	185.4	184.5	174.3
Food .....	196.3	195.6	194.4	181.7
Food at home .....	193.7	193.0	191.7	179.3
Food away from home .....	206.2	205.4	204.6	190.9
Housing .....	195.7	194.6	193.6	181.6
Shelter .....	198.2	196.9	195.6	182.4
Rent .....	157.9	157.0	156.1	148.3
Homeownership .....	213.0	211.5	210.0	195.0
Fuel and utilities .....	207.6	207.4	206.8	192.0
Fuel oil and coal .....	291.9	289.9	287.2	264.5
Gas and electricity ...	218.9	219.5	219.3	200.9
Household furnishings and operation .....	181.1	180.1	179.5	172.3
Apparel and upkeep .....	158.2	158.5	157.2	151.8
Men's and boys' .....	157.8	158.0	156.2	150.7
Women's and girls' .....	150.4	151.4	150.2	146.9
Footwear .....	159.6	159.9	159.1	153.4
Transportation .....	178.8	178.7	178.6	171.4
Private .....	178.0	178.0	177.9	170.7
Public .....	185.7	184.7	184.4	178.0
Health and recreation .....	178.5	177.9	177.1	168.0
Medical care .....	209.3	208.1	207.2	192.3
Personal care .....	176.3	175.5	173.9	165.2
Reading and recreation ..	161.3	160.9	160.6	154.4
Other goods and services	162.7	162.4	161.5	155.9

Source: U.S. Department of Labor, Bureau of Labor Statistics.

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